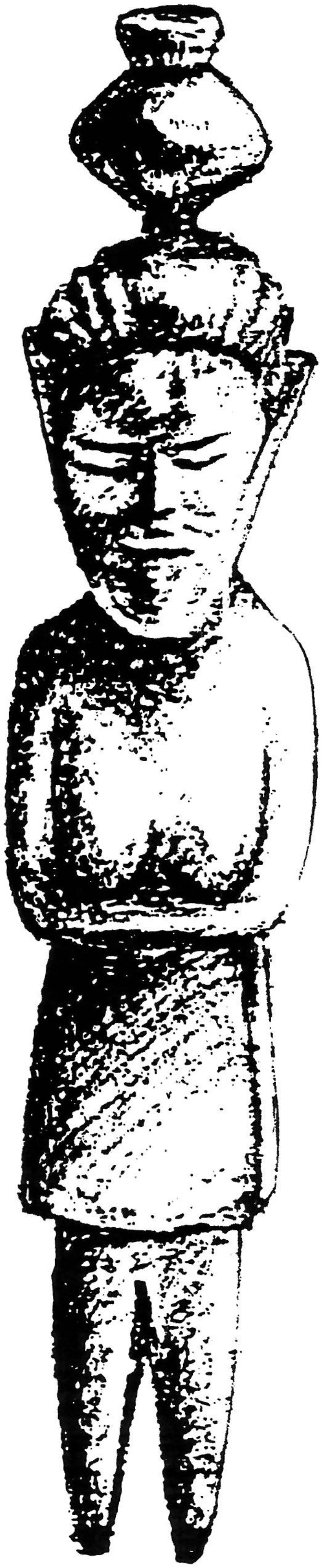
MOTHER TONGUE

JOURNAL OF THE ASSOCIATION FOR THE STUDY OF LANGUAGE IN PREHISTORY



In Memory of Aharon Dolgopolsky • אהרן דולגופולסקי זכר לברכה

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MOTHER TONGUE **Issue XVII • 2012**
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In Memory of Aharon Dolgopolsky • אהרן דולגופולסקי זכר לברכה

OFFICERS OF ASLIP

President:
Michael Witzel witzel@fas.harvard.edu
Department of Sanskrit Tel. 617-495-3295
& Indian Studies
Harvard University
1 Bow Street
Cambridge, MA 02138
U.S.A.
http://www.people.fas.harvard.edu/~witzel/mwpage.htm

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U.S.A.
http://jdbengt.net/

Secretary-Treasurer:
Michael T. Lewis lewismtc@rcn.com
20 Duane Avenue Tel. 617-964-0978
West Newton, MA 02465
U.S.A.

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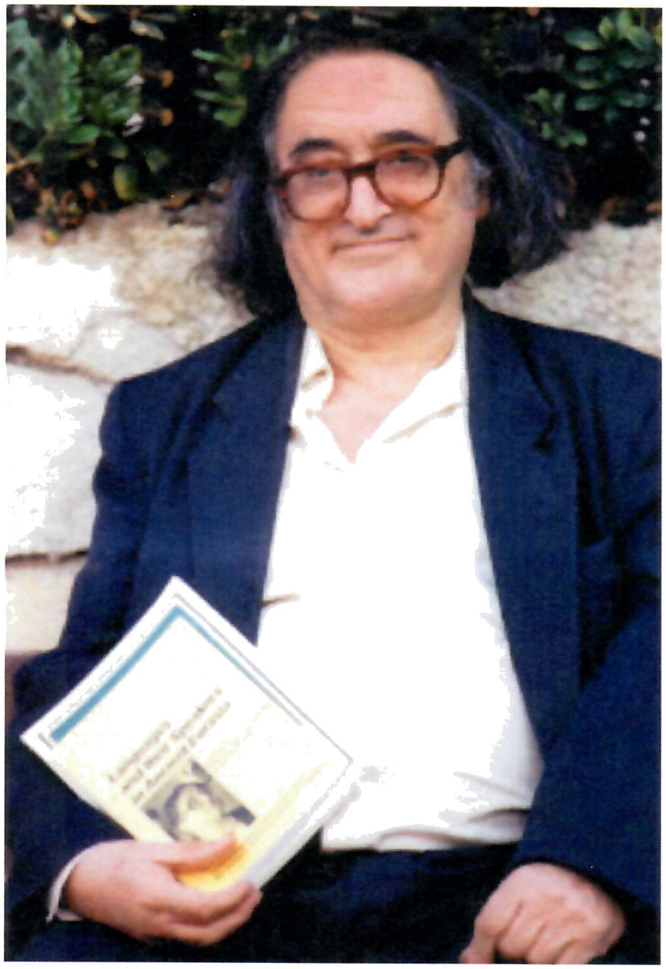

Aharon Dolgopolsky • אהרן דולגופולסקי • Арон Борисович Долгопольский

November 18, 1930 – July 20, 2012

In this issue we mourn and celebrate a true Giant
in the reconstruction and taxonomy of ancient languages
and the understanding of human prehistory.

Some Personal Memories of Aharon Dolgopolsky (1930-2012)

ITT
A PANNONIA NAGYTERMÉBEN
HANGVERSENYEZETT
1923. OKTÓBER 30-ÁN
BARTÓK BÉLA
(1881 – 1945)
MÚZEUMI HÓNAP 1965.
EXPO
BEE

Aharon Dolgopolsky at Pécs, Hungary, October 14, 1995
Thanks to Irén Hegedűs.

My Good Friend Aron Dolgopolsky

I met Aron Dolgopolsky 50 years ago. At that time I started working in the Russian Language Institute of the USSR Academy of Science in Moscow, and that is where he himself was working. The moment I met him he began to speak about remote genetic relationship between Nostratic languages (he called them Boreic or Borealic). This was a very interesting topic for me because by that time I had made many work-notes on genetic connections between Indo-European, Uralic, Kartvelian, and a few more languages.

We both worked now in the Department of Structural Linguistics, headed by Prof. S. Shaum'an. It was a part of the Russian Language Institute, headed by a well-known scholar V. Vinogradov. Neither Shaum'an nor Vinogradov interfered with our studies; they just reminded us that it was a duty of any collaborator to write two scholarly papers every year. These papers were soon published in different academic editions (books and journals). In this case the papers were about genetic relationship of languages and they usually appeared in a yearly edition of *Ètimologija* (= 'Etymology'), also a publication of our Institute, namely, of the Dept. of Slavic Languages, headed by a known Slavicist Oleg Trubachev (the author of the *Etymological Dictionary of Slavic Languages*). That is where Aron published many of his excellent papers on Nostratic.

In 1964 a linguistic conference took place in Moscow; at this meeting Aron met another expert in Nostratic linguistics, Vladislav (Slava) Illich-Svitych who was, quite independently, working on a Nostratic dictionary (partially published in 1971 after Slava's untimely death; it counted several hundred roots: this was just a beginning). After comparing their root reconstructions, both Aron and Slava found out that they generally came to the same results: this confirmed that they both were on the right path into the prehistory of languages.

Aron soon started giving lectures at the Dept. of Philology of the Moscow State University (he did this lecturing for 3 years). A number of well-known scholars were among the listeners, – but also but also a few students, among them Sergei Starostin, who later became a leading figure both in the Nostratic and other macro-families of human languages.

Aron was very friendly, helpful, witty person. On many occasions he participated in amateur stage performances, quite popular both in our Institute and in the nearby Institute of Linguistics (in a couple of years Dolgopolsky went to work there).

Aron very actively took part in various comical performances, playing very funny characters; he also wrote several songs about language-related events, using existing popular melodies, - and soon everybody was singing them (and they still are singing).

It was at Dolgopolsky's place that I wrote several chapters of my dissertation which had the title *Sound-Chains in the World's Languages* (later it became a book): Aron had in his library many books which contained language descriptions, and I used most of them for my dissertation. I also asked Aron about many specific languages (not only Nostratic; for me at this time the shape of a spoken language was important, not its origin), and so he was 'lecturing' me, never complaining about the time used for such lectures – for just one listener. He was indeed a very generous guy.

In the 1970s both of us left Moscow. He went to Haifa University in Israel; I went to Vienna, Austria, and soon to Yale University, New Haven, USA. We stayed in close contact, and visited each other. (I always came to Haifa with my wife Galina Barinova, who used to work with me and Aron in the Russian Language Inst.) This went on for many years. In 1988 I was working at the University of Michigan in Ann Arbor. My colleague Ben Stolz (then head of the Slavic Dept.) and I received a grant for an *International Symposium on Language and Prehistory*. Naturally, Dolgopolsky's name was the first on the list of invited participants. Our task was to show scholars of Western Europe and USA how advanced the studies in Nostratic linguistics had become since they started about three decades earlier. (The term "Nostratian" was coined by a genius Danish linguist H. Pedersen[1] in 1903, or so; prominent pioneers of Nostratic research were also B. Collinder, N. Poppe, and K. Menges.)

Fortunately, we were able to welcome to our Symposium in Ann Arbor, in Nov. 1988, Aron Dolgopolsky, his several pupils who came from different countries, his European supporters who also worked in Nostratic languages (such as German veteran-comparatist Karl Menges, and the very young, highly talented Czech linguist Václav Blažek, and a few others). Papers from the Ann Arbor Symposium, including those by Dolgopolsky, were published in Germany in five volumes in the years 1988-90.

Very soon Aron was invited to teach a seminar on Nostratic in Cambridge, England; here he was telling his audience not only about reconstructing the Nostratic proto-language, but also about what we know – from a reconstructed lexicon – about the life and habits of people who lived some 15 thousand years ago. Soon an international conference gathered in Cambridge to discuss Dolgopolsky's scholarly achievements; materials of this conference have been published in 2 volumes,[2] and so on, and so on.

Aron's 70th birthday was observed in different cities of the world in various ways. A book *Languages and their Speakers in Ancient Anatolia*, dedicated to this event, was published by Dr. P. Sidwell and myself in Canberra, Australia. Somewhat later a second volume of the same *Festschrift* appeared in Denmark; it was published by Prof. H. Sverdrup (Lund University, Sweden) and myself.

Aron's main scholarly achievement is, of course, his enormous *Nostratic Dictionary* which consists of precise reconstructions of several thousand Nostratic roots – a reconstruction which is supported by material from many

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[1] See Pedersen's article "On the question of the relationship of Indo-European and Ugrofinnic" in *Mother Tongue* XVI [Ed.].

[2] A. Dolgopolsky, *The Nostratic Macrofamily and Linguistic Palaeontology* (1998); C. Renfrew & D. Nettle (eds.), *Nostratic: Examining a Linguistic Macrofamily* (1999); both published by the McDonald Institute for Archaeological Research, Cambridge [Ed.].

Nostratic languages. There are the expected phonetic correspondences between languages of different language groups and families; Nostratic linguistics is, indeed, a very precise scholarship.

But there are many other pioneer studies accomplished by Dolgopolsky, not just his *Dictionary* – for instance, the establishment of a hierarchy of stability of the most ancient and very frequently used words in the languages of the world. And speaking about Aron's scholarly work one should remember that he also was a great educator; he was able to write about languages very clearly, so that everybody could understand him. And he managed to publish a lot of popular papers, both in Russian and in other languages.

He was a great scholar, and people will learn from him for years to come.

Still, for me he was, first of all, a dear friend, witty and funny, ready to make jokes, to sing, to speak about thousands of topics, and to help – but never mournful (I'm sure sometimes he was, but it never showed).

Vitaly Shevoroshkin
Ann Arbor, January 2013

✡ ✡ ✡

The name Aharon Dolgopolsky is well-known to everyone and anyone doing work in long-range linguistic comparison. Indeed, he was one of the co-founders of modern Nostratic studies. His crowning achievement was his *Nostratic Dictionary*, a draft of which was made available on-line in 2008. This dictionary is an indispensible resource. Anyone who takes the time to work through the etymologies contained in this dictionary cannot help but be impressed both by Dolgopolsky's vast knowledge as well as by the amount of work that went into preparing this book. It is a staggering loss that he did not live to complete the final revisions to this work.

But, there is more. Not only was he a great scholar, he was also a great human being. He was generous and kind-hearted, at times playful, at times stern. He was a husband, a father, and a grandfather.

I still remember the first time I met him. It was August 1983, and I was living in Boston at the time. As it happens, Dolgopolsky's daughter also lived in Boston, and he was in town visiting her. I got a telephone call, and the caller identified himself as "Aharon Dolgopolsky". At first, I thought it was friends playing a trick on me, but, then, he wanted to come to my home, which he did, along with his daughter. And, sure enough, it really was Aharon Dolgopolsky. Then and there, he generously gave me all of his and Illič-Svityč's work on Nostratic. That was the beginning of a long-term friendship.

I am glad that he was part of my life, and he will be sorely missed.

Allan R. Bomhard

✡ ✡ ✡

My friend and esteemed colleague, Aharon Dolgopolsky, **died at his computer,** probably trying to fit another morpheme or word into some etymology which he was building up or wanted to add strength to. As the Americans say, Aharon died with his boots on! Moreover, those were very large boots because this man has probably worked on as many cognate sets (etymologies) as any scholar ever has. The only other linguists who possibly equaled Aharon's record, and scholars who I knew personally, were Morris Swadesh and Joseph Greenberg. Of those not known personally I think of Carl Darling Buck on Indo-European and Sir Harry H. Johnston with his hundreds of Bantu languages. Other prominent linguists who might match Aharon in productive output and masses of cognates might be Karl Meinhof in Africa and the great Trombetti. But Meinhof was more apt to select grammatical or phonological aspects in sweeping classifications than to amass the real red meat of genetic linguistic taxonomy – cognate compilations. But Trombetti was not so limited, although influenced by Meinhof's work, and might even have excelled Aharon, as well as Greenberg and Swadesh. Who will check the score cards and see who won the prize? Maybe no one cares about the score and maybe **no one should care** but the main point is that Aharon is to be compared with our **great** workers, our most **productive** scholars.

Aharon was also friendly and helpful. Since many linguists can be very snotty about their work and what is correct and what is silly to believe (on your part), Aharon was conspicuous for not being that way. Once at a conference when I was being flailed alive by some severely critical Israeli linguists, Aharon was quiet and thoughtful. Later on, he quietly reassured me that 'they' were not entirely correct and that they should not have attacked me so vigorously. Since no one really enjoys being skinned alive, I was very grateful that the best of all Israeli linguists did not agree with my assailants! This event happened before we started ASLIP and *Mother Tongue*, before we were united as partners in a common enterprise.

Back in the earlier days, when we both labored in the Afroasiatic vineyard, some of Aharon's Cushitic reconstructions were very helpful to American scholars. I remember how happy and excited Paul Black was to discover Aharon's work in Cushitic where Paul was working on his doctoral dissertation. Doing intensive work on East Cushitic reconstruction, Paul found Aharon's work to be useful and inspiring, partly because he was getting little help from me on that for which I lacked interest. As a formally trained linguist, including instruction on Indo-European's focus on reconstruction, Paul found Aharon's proto-Cushitic to be a relief and encouragement.

Paul also noticed something interesting. Given the Greenberg and Fleming emphasis on taxonomy, we were less helpful on reconstruction. Since Paul had opened up a hornet's nest of problems with the new or newly discovered implosive glottalics of the Konsoid and Dullay branches of East Cushitic, and their strong pharyngealization, Paul appreciated all the help he could get. Here Aharon's work was most helpful to Paul. But, given Aharon's emphasis on reconstruction, he sometimes overlooked taxonomy and would sometimes reconstruct the wrong ancestor for a group of languages. To put the matter in more familiar terms let us put it this way. Aharon might reconstruct the ancestor of *German, French,* and *Spanish* and call it 'Romance' while it was actually closer to being proto-IE. But the reconstruction itself might be very accurate!

Aharon helped me a great deal on Semitic, especially with the newly known but phonetically complex Modern South Arabian languages for which new data were pouring in those days. Such as *Mehri, Jibbali*, and *Shhauri* [šhauri] are quite distinctive and even more complex or historically useful than *Arabic* itself. The new data also indicated that south Arabian languages **were not necessarily** all closely related to each other and to the Ethiopic branch of Semitic. Some of his students even suggested that this Modern South Arabian family was **divergent** enough to be classified as a **major branch** of Semitic coordinate to *Akkadian* itself. I tended to agree with that hypothesis, although I never did find out what Aharon thought of it. He also sent me reprints of articles on *Aramaic* and the glottalized lateral stops of *Semitic*, e.g. **[tl']**. Very useful!

He also had some triumphs and some disappointments. I found, as did many others, that his thesis that the 'emphatic' consonants of Asiatic *Semitic* were all descended from glottalized consonants was **very helpful**. For an *Amharic*-speaking Ethiopianist, like me, it was suddenly possible to find *Semitic* cognates all over the place, especially in *Hebrew* and *Arabic* with those dreadful 'emphatics' finally making sense. Aharon's thesis benefitted Afroasiatic too because it became easier to find 'phylum cognates' between *Semitic* and *Cushitic* or *Omotic* both of which lacked those emphatics themselves and which had the greatest historical distance from literate northerners. Like *Semitic* and *Egyptian.*

Aharon also contributed mightily to the diminution of what we may call the outright snobbery of many Semiticists towards their poor benighted and probably illiterate country cousins in northeast Africa and the Horn, East Africa, and the Chadic realm. Having an old writing system and a well-studied grammar like Hebrew, Arabic, or Phoenician was the *sine qua non* of an Afroasiatic language. That was "civilized" and the African portions were to be understood as deviations from that high standard. Aharon helped to replace that mistaken image with one in which the Africans pointed out the way to a far more ancient and more African ancestor – proto-Afroasiatic.

When he tried something quite useful and apropos for the hard-working linguists struggling with a multitude of writing systems, both ancient and modern, he was trying to help long rangers. As we published in *Mother Tongue*, he presented an international alphabet – a phonetic one – for us to use to record our field data and to communicate with our colleagues. It was large, comprehensive, and (*malheureusement*) too deviant from what most Western linguists were used to working with. It was a flop! Well, as they say, you cannot win them all!

But the biggest point of my memory or our memory of Professor Dolgopolsky's work is everything concerning **ASLIP** and *Mother Tongue*. He had been one of the early linguists to join Illič-Svityč and Vladimir Dybo in the pioneering movement to follow up on Holger Pedersen's *Nostratic* hypothesis. At least that is the gist of what Alexander Militariev told me in 1986 at the famous

Moscow Conference which began the Russian long rangers' cooperation with Americans of similar persuasion.[3] It may be of some interest, so as to appreciate the cultural frame of mind in Moscow during that conference, to relate the outcome of another fierce attack on me by Israeli linguists. At one point in our session's discussion of some matter of historical linguistic import I made several suggestions of long ranger type – I cannot remember what the precise issue was – but whose import would be to try to relate *Afroasiatic* (which includes *Semitic*) to *Indo-European* and other Eurasian families. In this endeavor I was following Morris Swadesh, my friend, whose proposals were much broader than *Nostratic* and included *Vasco-Dene* one generation before Nikolaev & Starostin's *Dene-Caucasic* and perhaps 30 years before my *Borean* hypothesis.[4]

In this context the Israeli linguists castigated me for foolish proposals which could not be demonstrated properly, not to mention ever 'proven'. After I sighed and resigned myself to quitting an argument I could not possibly win, the session moved on to another topic, a thoroughly boring discussion of whatever. Then to my surprise and delight a swarm of young Russian linguists descended on the Israelis and gave to them what had been given me – a good scolding! Although Aharon was not attending the conference, I realized that my Russian champions were in fact probably his former students. So I thanked him in absentia!

It also became clear eventually that Pedersen had not been the only influence on the development of the 'Moscow school' of long rangers. As became apparent from discussions with Aharon and later Igor Diakonoff both Swadesh and Greenberg were known to Muscovites and their work appreciated. So some time before the great Moscow Conference both future partners were being influenced by long range proposals made by competent linguists.

In closing, let me set the record straight about the Moscow Conference and the birth of ASLIP. The initial impetus at the conference was not the work of either Fleming or Dolgopolsky. **The key figure was Alexander "Sasha" Militariev.** He spent the hours talking with me, persuading me, arguing with me, and doing a terrific selling job. He brought his colleagues together with me, entertained me, and helped them persuade me to 'have a go at' collaboration. Vitaly Shevoroshkin came later and helped a lot, as did Diakonoff. And when Aharon got involved, sometime after the conference and after Sasha had planted the seeds and watered the young plants, he helped set up our structure which eventually became ASLIP and its publication, *Mother Tongue*.

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[3] The "Moscow Conference" mentioned throughout this memoir was the Ninth International Conference of Ethiopian Studies, Moscow, August 1986 [Ed.].

[4] I have come to realize that Morris Swadesh was on track to become the Trombetti of the late 20th century. First he would outline the taxonomy, then go back and work out the details of each taxonomic section. It was most unfortunate that this inspired linguist should die at the relatively young age of 58. And doubly unfortunate was his mistreatment by most American linguists, especially historical linguists. It was not only due to his vast expansion of the taxonomic realm and his bold invention of glottochronology but also his Marxist – and some said 'Communist' – political views. He was widely disliked, even by his one-time partner and obviously similar co-worker, Joseph Greenberg. Since I liked and admired both of them, I was never able to figure out how Morris was able to maximize his unpopularity among linguists. No jobs were offered, no honors, probably no conference invitations – so Morris fled to Mexico!

Therefore in view of his role in giving birth to our common effort, I propose that ASLIP set up a special prize for outstanding work on the part of some member to reward him or her for their work. On a yearly basis, if possible, let the money be more than adequate – say $1000 or €850 – and let the prize be to honor and be named after Aharon. Let us call it the ***Dolgopolsky Prize*** and let us take it seriously!

Harold C. Fleming
Boston University (Emeritus)

✡ ✡ ✡

I discovered the Nostratic hypothesis for myself in 1971, reading the Czech translation of the book *Sproget* (1963) by Louis Hjelmslev. I was fascinated by the idea of distant relationships on the level of protolanguages of language families. Seeking more detailed studies, I had found the book *Opyt sravnenija nostratičeskix jazykov*,[5] vol. I (Moskva 1971) by V.M. Illič-Svityč, in the National Library in Prague. I had a chance to borrow the book for three weeks. At that time it was impossible to make a photocopy of any book in my country. I saw that the only possibility was to write the whole book by hand. In the Bibliography were cited other studies devoted to distant relationship; besides Illič-Svityč there was Aron Borisovič Dolgopol'skij.[6] I got my hands on some of his articles and I copied them in the same way I had done with the Illič-Svityč book.

In 1973 the book *Sravnitel'naja fonetika kušitskix jazykov*[7] was published, and I had it at my disposal for one month in 1976. In its bibliography a complete list of Dolgopolsky's publications (till 1972) had been collected. I began to collect his articles systematically, copying them all manually. I had read that Illič-Svityč was already dead at that time (1966). My dream was to meet Dolgopolsky, at least, personally, but the information that he had emigrated to Israel meant that this was absolutely impossible. During the 1980s I found ways to get Dolgopolsky's new articles published in the West through inter-liberary service.

Beginning in 1985 I started making tourist visits to meet the Russian linguists interested in the Nostratic hypothesis, and comparative linguistics in general, in Moscow and Leningrad (now Sankt Peterburg again). Naturally, by then Aaron Dolgopolsky had already been away 10 years, but the pupils of his Nostratic seminar remained. Already during the first visit I met Vladimir Dybo, collaborator with, and editor of Illič-Svityč, his daughter Anna Dybo, Alexander Militarev, Sergei Starostin, Olga Stolbova, Viktor Porxomovskij, Oleg Mudrak, and in Leningrad Igor Diakonov, the only Russian of that time who was not afraid to quote Dolgopolsky's name. Any person emigrating from Russia was to be eliminated from all public databases, such as libraries, bibliographies, etc. He simply no longer existed in the Soviet Union (although his book on Cushitic phonetics was available in bookshops). The Nostratic hypothesis was designated as "Jewish linguistics," much like Einstein's theory of relativity in 1933 Germany ...

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[5] 'Experiment in the comparison of Nostratic languages.' [Ed.]
[6] Russian spelling. Henceforth the common Anglicized spelling is used. [Ed.]
[7] 'Comparative phonetics of the Cushitic languages.' [Ed.]

A decisive change came thanks to Gorbačev's *perestrojka* in 1987. Hans Mukarovsky invited Russian colleagues and myself to the Hamito-Semitic Congress organized by him in Vienna in late September. It was extremely difficult to obtain all the permissions needed to travel through the Iron Curtain to the *West*, in reality, in this case, to the southeast of Prague. Finally I arrived in Vienna and went to the building where the first meeting was to take place, but it was too early and the building was closed. Besides me only one man came prematurely, Aaron Dolgopolsky! When I introduced myself, he told me that he knew one of my (not yet numerous) articles. When he introduced himself, I could reply that I knew all his publications. We sat together to eat something, sausages which Aaron brought from Frankfurt, and cakes baked by my wife. The congress was really great, my first international experience of this type. Most touching was the meeting of Aaron and his pupils from Moscow, the first in 12 years. The second great thing was that Aaron organized a meeting with Karl Menges in his beloved restaurant.

The next occasion to meet Aaron Dolgopolsky came soon thanks to Vitaly Shevoroshkin and Hal Fleming, who organized a grand conference on the distant relationships between language families at the University of Michigan in Ann Arbor. They invited long-rangers from USA (Bomhard, Greenberg, Ruhlen, Bengtson, Tyler and others) and Europe (Menges, Hegedűs and others), including Russian colleagues. For some of them, such as Sergei Starostin, it was their first journey abroad!

From that time on I met Aaron regularly at various conferences devoted to Afroasiatic or Nostratic linguistics: 1988 University of Michigan, Ann Arbor; 1989 Torino and Moscow, where he could return for the first time since 1975; 1991 Leiden; 1994 Moscow where we had accommodations together during the Afroasiatic congress; New Delhi where he met me at the airport; 1995 when he came from Irén Hegedűs at Pécs to visit my *Alma mater*, Masaryk University in Brno, and after his lecture in Brno he spent a week in my home in Příbram to copy the maximum number of my books and copied articles (by then, fortunately, not by hand), etc., till 2004 when we met for the last time at the Santa Fe Institute in New Mexico. During the last 20 years he frequently phoned me. He did not use the internet and this was his way of making direct contact and verifying bibliographic information.

Aaron Dolgopolsky was one of those scientific titans who shifted the level of our knowledge more than whole generations earlier. For us, his followers, it is a great honor that we can stand on the shoulders of giants of his size.

And finally an etymological excursion. The name of the biblical ’*Ah*^{a}*rôn*, brother and spokesman of *Mōšê*, is not etymologizable from Hebrew, but is easily intelligible in Egyptian:

ˁ *3 rn*	[ˁa3(u) rīn]	“great is the name”

Is there any better witness that the proverb *nomen omen* is valid?

Václav Blažek
Masaryk University

✡ ✡ ✡

Memories of Aharon B. Dolgopolsky from Pécs

It was at the *1st International Interdisciplinary Symposium on Language in Prehistory* held in Ann Arbor in 1988 that I first met Aharon B. Dolgopolsky. I may not be the only one who would start their personal recollections about Aharon by remembering this symposium. I was looking forward to participating in this symposium because it gave me a chance to get acquainted with outstanding experts investigating the possible distant genetic ties between language families. Neither may I have been the only participant at the symposium who felt like being in the company of ‘walking legends’, especially when talking to Aharon.

Seven years later, in 1995, I had the pleasure of hosting Aharon in Pécs (Hungary), where he spent a couple of days and gave a lecture on the consonant system of Nostratic at the University of Pécs. His handout included some etyma (‘water’, ‘to look, see’, ‘woman of the other moiety’) from the preliminary version of his *Nostratic Dictionary* (see the scanned pages below in *Memorabilia*). After his lecture we went for a walk in the historical center of Pécs, and when passing by a memorial plaque of the Hungarian composer, Béla Bartók, Aharon immediately thought of his wife (a musician), and mentioned how happy she would be to see the place where Bartók gave a concert. Since I had my camera with me, this was a good opportunity to take a photo of Aharon in front of that memorial plaque (see the photo below in *Memorabilia*). Then we had coffee and cakes at my place, where Aharon looked at the holdings of my library: books, offprints, and xerox copies (see a photo of Aharon and me in my study, below in *Memorabilia*). I was most proud that he could find a few items that he wanted to copy for his own collection, which was obviously incomparably richer than mine.

Another (kabbalistic) seven years later, in 2002, when preparations for the *Nostratic Centennial Conference* (to celebrate in Pécs in 2003 the idea of Nostratic put forward by Holger Pedersen in 1903) started, it was self-evident that inviting professor Dolgopolsky for a plenary talk was the first thing on my mind. So I sent him the invitation in the hope of his second visit to Pécs. Soon after this I got a phone call from Haifa: Aharon told me about his health problem, and was kindly apologizing for not being able to participate at the Pécs meeting. He was 72 then, and the doctors had warned him that travelling, especially flying, in his condition at that time would have meant a serious risk that he was to avoid. So his second visit to Pécs, which would have been a significant contribution to the Centennial meeting, unfortunately did not materialize.

To an outsider Aharon may have appeared to be an eccentric (of the lovable type). Those who knew him understood that there was nothing eccentric about him: he was not simply practicing his profession of a historical linguist but he was a person living a life in historical linguistics: a life that was filled with passion for studying the history of languages and for the reconstruction of prehistoric stages of language families. Aharon lived to be 81, and could accomplish his (much awaited) *Nostratic Dictionary*, an achievement that has put a crown on his intellectual legacy. It might be some consolation – especially for those of us involved in the investigation of the Nostratic hypothesis and also for the wider ASLIP community – that Dolgopolsky's *Nostratic Dictionary* serves us a substantial dish that will provide food for thought and discussions for a long time.

It was a privilege for me to have known Professor Aharon Dolgopolsky, and I will think of his passing away as a departure for a reunion with his fellow linguists, Vladislav M. Illich-Svitych (1934–1966), Sergei A. Starostin (1953–2005), Evgeni A. Helimsky (1950–2007), all of whom took painfully early departures for that heavenly symposium.

Irén Hegedűs
University of Pécs, Hungary
January 28, 2013

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The beautiful mind of Aharon Dolgopolsky

Reading the history of linguistics, and seeing this history right in front of your eyes, makes for a very big difference. This is why I was so amazed when I met Aharon Borisovich in person in late 2010. Before that, I knew him by his writings and articles, some of which were among the cornerstones of the bibliography I used for my Ph.D. thesis. I definitely knew the *Nostratic Dictionary*, undoubtedly the most extensive lexical database of the largest Eurasian language macrofamily, of which Dolgopolsky was an author. But it always seemed to me there was an enormous gap between the great discoveries which made his name known all around the globe back in the 1960s, and my research of the first decade of the 21st century. Together with Vladislav Illich-Svitych, Aharon Dolgopolsky was a legend for me, and every story of his studies and his daily life both in the USSR and then in Israel had the mysterious aroma of a legend.

One of these numerous stories is about the famous map of the Soviet Union which Dolgopolsky possessed. Back in the 60s, having started to work with lexical comparisons between language families of the Old World, he was in need of a vast sheet of paper to draw a complicated network containing thousands of lexical connections between thousands of tongues. Having no sticky tape but plenty of creative mind, Aharon Borisovich bought a gigantic map of the USSR and used its back surface for his scientific research. When, however, the decision was made to move to Israel in 1976, the Soviet border security grew extremely suspicious upon discovering in his luggage a Soviet map with millions of code signs, undecipherable symbols, and arrows on the back of it. What else could that be if not the scheme of the nuclear shield of the Soviet Union? The top classified secret document was not allowed to be taken beyond the Russian border. It took years to find an opportunity to move it to Haifa - with the help of a European fellow-professor with a diplomatic passport. But when the map was finally reunified with its owner, it appeared that Aharon Dolgopolsky had already drawn its exact copy: he remembered it in every detail, by heart.

This and many other similar stories about the genius of Dolgopolsky made him an icon, rather than a living being, in the eyes of young generations of Russian scholars. When in 2008 we founded the *Journal of Language Relationship*, we were especially proud that Aharon Borisovich agreed to join our Editorial Board. Without any access to email services, he could only be reached by phone, and I carefully sent every issue of the journal to his postal address in Haifa. Finally, in 2010 I decided to visit his place, to hand him the latest journal in person, and to finally get acquainted with the legend.

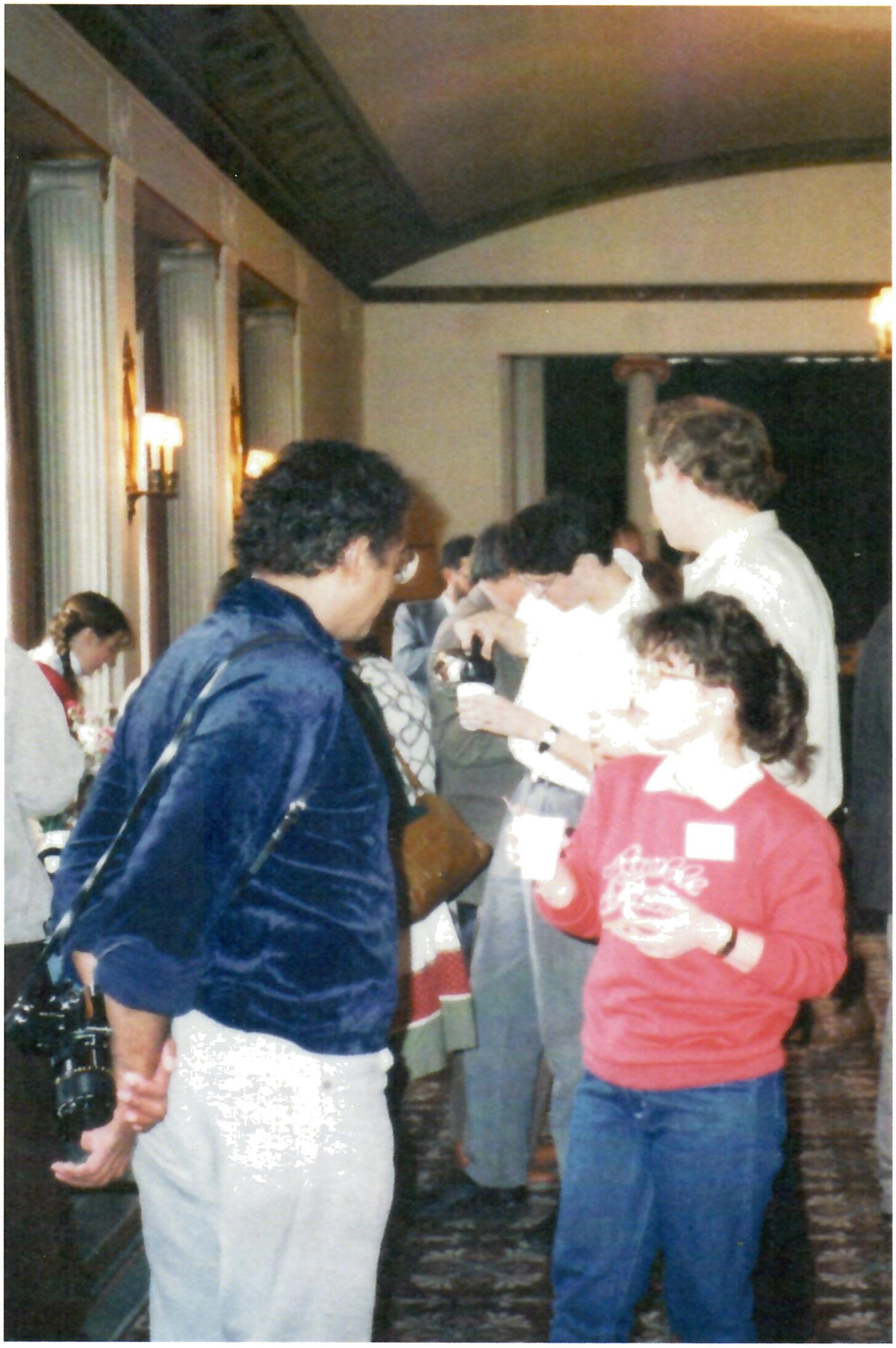
"Have you brought your book with you?", his first words were, as soon as I entered his apartment in the laid-back neighborhood of Haifa. I was surprised to see that Dolgopolsky had not only heard of my book, published a year before in Moscow, but was interested in some of the Nostratic and Indo-European pronominal comparisons I had proposed. That seemed especially amazing for a person who lived almost literally in a house made of books. Books were everywhere: on the table, under the table, beside the table, they towered on the shelves reaching the ceilings, and formed ramparts and bastions all around the place. There was no floor in his office: you had to walk on multiple layers of books and papers covering the invisible floor. It was absolutely impossible to imagine how anyone could find any particular volume in this Great Library of Alexandria. Nevertheless, during our conversation on Nostratic phonological correspondences, Aharon Borisovich surprised me again. "You are wrong, by the way," he said, "when you suppose that an older **q* could give **x* in Yukaghir." I tried to remember where on earth I could have claimed that. "In your 2007 paper on the 1st person plural pronouns in Nostratic," Dolgopolsky replied, and suddenly, with an elegant motion, he retrieved some volume from a nearby pile of dusty books and opened it to a page where I saw my article and my hypothetical **q* > **x* in Yukaghir…

Aharon Dolgopolsky got his Ph.D. exactly half a century earlier than I did. Since then he kept in mind absolutely everything he read, analyzed, collected or came across. I am always asking myself if I could remember anything at all 50 years from now.

His was a beautiful mind I will always admire.

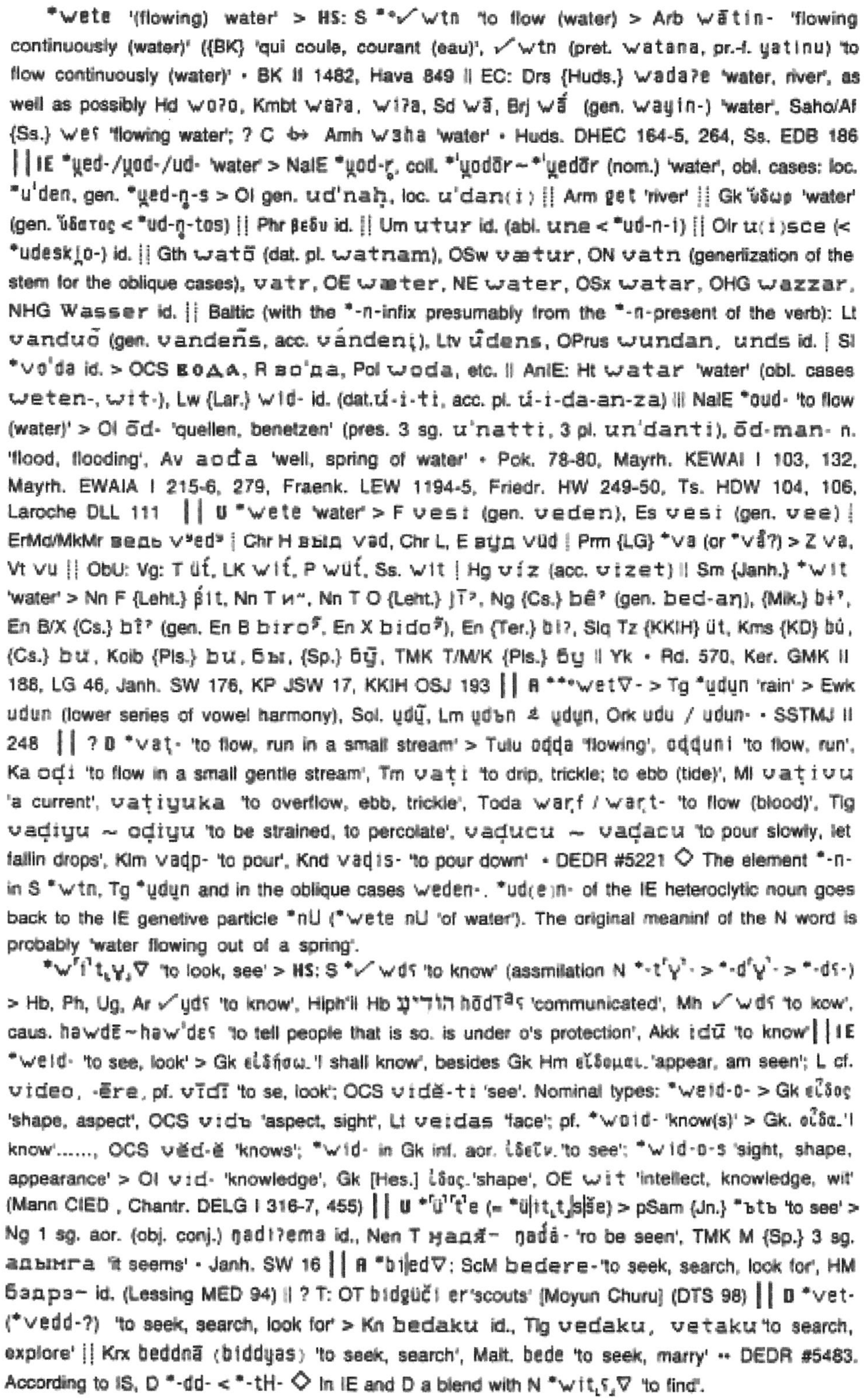
Kirill Babaev
Russian Academy of Sciences

Memorabilia of Aharon Dolgopolsky



Aharon Dolgopolsky with Irén Hegedűs, First International Interdisciplinary Symposium on Language and Prehistory, Ann Arbor, Michigan, November 1988. (Thanks to Allan R. Bomhard)

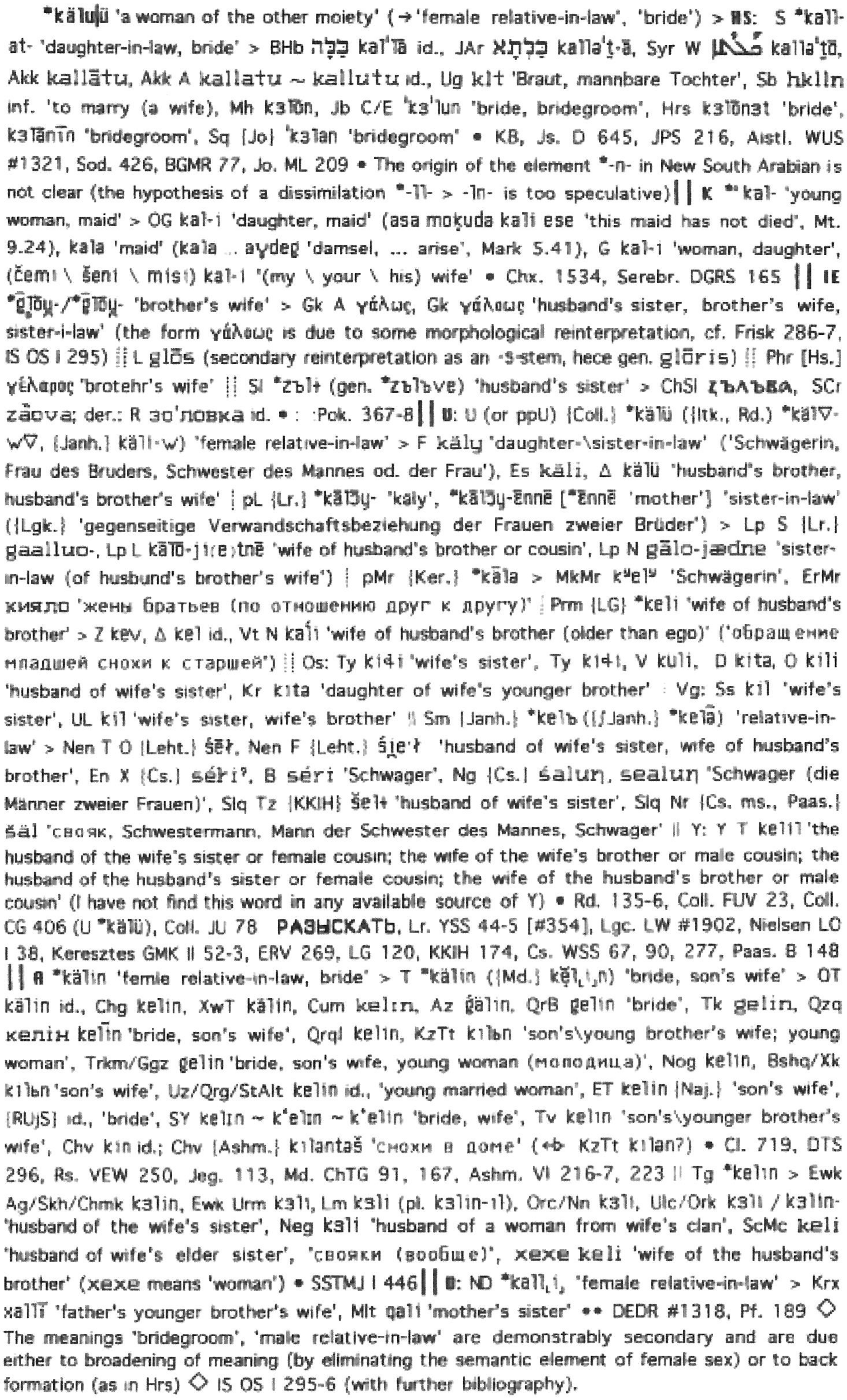
Handout on Nostratic at the University of Pécs, 1995, page 1:



*wete '(flowing) water' > **HS:** S **✓wtn 'to flow (water) > Arb wātin- 'flowing continuously (water)' ({BK} 'qui coule, courant (eau)', ✓wtn (pret. watana, pr.-f. yatinu) 'to flow continuously (water)' • BK II 1482, Hava 849 || EC: Drs {Huds.} wadaʔe 'water, river', as well as possibly Hd woʔo, Kmbt waʔa, wiʔa, Sd wā, Brj wā́ (gen. wayin-) 'water', Saho/Af {Ss.} weʕ 'flowing water'; ? C ↔ Amh wəha 'water' • Huds. DHEC 164-5, 264, Ss. EDB 186 || IE *u̯ed-/u̯od-/ud- 'water' > NalE *u̯od-r̥, coll. *'u̯odōr ~ *'u̯edōr (nom.) 'water', obl. cases: loc. *u'den, gen. *u̯ed-n̥-s > OI gen. ud'naḥ, loc. u'dan(i) || Arm get 'river' || Gk ὕδωρ 'water' (gen. ὕδατος < *ud-n̥-tos) || Phr βεδυ id. || Um utur id. (abl. une < *ud-n-i) || OIr u(i)sce (< *udeski̯o-) id. || Gth watō (dat. pl. watnam), OSw vætur, ON vatn (generlization of the stem for the oblique cases), vatr, OE wæter, NE water, OSx watar, OHG wazzar, NHG Wasser id. || Baltic (with the *-n-infix presumably from the *-n-present of the verb): Lt vanduõ (gen. vandeñs, acc. vándenį), Ltv ûdens, OPrus wundan, unds id. | Sl *vo'da id. > OCS вода, R во'да, Pol woda, etc. || AnIE: Ht watar 'water' (obl. cases weten-, wit-), Lw {Lar.} wid- id. (dat.ú-i-ti, acc. pl. ú-i-da-an-za) ||| NalE *oud- 'to flow (water)' > OI ōd- 'quellen, benetzen' (pres. 3 sg. u'natti, 3 pl. un'danti), ōd-man- n. 'flood, flooding', Av aoδa 'well, spring of water' • Pok. 78-80, Mayrh. KEWAI I 103, 132, Mayrh. EWAIA I 215-6, 279, Fraenk. LEW 1194-5, Friedr. HW 249-50, Ts. HDW 104, 106, Laroche DLL 111 || U *wete 'water' > F vesi (gen. veden), Es vesi (gen. vee) | ErMd/MkMr ведь vʲedʲ | Chr H выд vəd, Chr L, E вӱд vüd | Prm {LG} *va (or *vå?) > Z va, Vt vu || ObU: Vg: T üť, LK wiť, P wüť, Ss. wit | Hg víz (acc. vizet) || Sm {Janh.} *wit 'water' > Nn F {Leht.} β́it, Nn T и", Nn T O {Leht.} jīʔ, Ng {Cs.} bêʔ (gen. bed-aŋ), {Mik.} bɨʔ, En B/X {Cs.} bīʔ (gen. En B biroʔ, En X bidoʔ), En {Ter.} biʔ, Slq Tz {KKIH} üt, Kms {KD} bü, {Cs.} bɯ, Koib {Pls.} bɯ, бы, {Sp.} бӱ, TMK T/M/K {Pls.} бу || Yk • Rd. 570, Ker. GMK II 188, LG 46, Janh. SW 176, KP JSW 17, KKIH OSJ 193 || A ***wet∇- > Tg *u̯du̯n 'rain' > Ewk udun (lower series of vowel harmony), Sol. u̯dũ, Lm u̯dъn ≗ u̯du̯n, Ork udu / udun- • SSTMJ II 248 || ? D *vaṭ- 'to flow, run in a small stream' > Tulu oḍḍa 'flowing', oḍḍuni 'to flow, run', Ka oḍi 'to flow in a small gentle stream', Tm vaṭi 'to drip, trickle; to ebb (tide)', Ml vaṭivu 'a current', vaṭiyuka 'to overflow, ebb, trickle', Toda war̥f / war̥t- 'to flow (blood)', Tlg vaḍiyu ~ oḍiyu 'to be strained, to percolate', vaḍucu ~ vaḍacu 'to pour slowly, let fallin drops', Klm vaḍp- 'to pour', Knd vaḍis- 'to pour down' • DEDR #5221 ◇ The element *-n- in S *wtn, Tg *u̯du̯n and in the oblique cases weden-, *ud(e)n- of the IE heteroclytic noun goes back to the IE genetive particle *nU (*wete nU 'of water'). The original meaninf of the N word is probably 'water flowing out of a spring'.

*w'i't‚y‚∇ 'to look, see' > **HS:** S *✓wdʕ 'to know' (assmilation N *-t'y'- > *-d'y'- > *-dʕ-) > Hb, Ph, Ug, Ar ✓ydʕ 'to know', Hiph'il Hb הוֹדִיעַ hōdT^{a}ʕ 'communicated', Mh ✓wdʕ 'to kow', caus. ḥawdē ~ ḥaw'dɛʕ 'to tell people that is so. is under o's protection', Akk idū 'to know' || IE *weid- 'to see, look' > Gk εἰδήσω 'I shall know', besides Gk Hm εἴδομαι 'appear, am seen'; L cf. video, -ēre, pf. vīdī 'to se, look'; OCS viděti 'see'. Nominal types: *weid-o- > Gk εἶδος 'shape, aspect', OCS vidъ 'aspect, sight', Lt veidas 'face'; pf. *woid- 'know(s)' > Gk. οἶδα 'I know'......, OCS věd-ě 'knows'; *wid- in Gk inf. aor. ἰδεῖν 'to see'; *wid-o-s 'sight, shape, appearance' > OI vid- 'knowledge', Gk [Hes.] ἶδος 'shape', OE wit 'intellect, knowledge, wit' (Mann CIED , Chantr. DELG I 316-7, 455) || U *'ü''t'e (= *ü|it‚t‚|s|še) > pSam {Jn.} *ъtъ 'to see' > Ng 1 sg. aor. (obj. conj.) ŋadiʔema id., Nen T ңадя- ŋaďa- 'ro be seen', TMK M {Sp.} 3 sg. адымга 'it seems' • Janh. SW 16 || A *bi|ed∇: ScM bedere- 'to seek, search, look for', HM бэдрэ- id. (Lessing MED 94) || ? T: OT bidgüči er 'scouts' [Moyun Churu] (DTS 98) || D *vet- (*vedd-?) 'to seek, search, look for' > Kn bedaku id., Tlg vedaku, vetaku 'to search, explore' || Krx beddnā (biddyas) 'to seek, search', Malt. bede 'to seek, marry' •• DEDR #5483. According to IS, D *-dd- < *-tH- ◇ In IE and D a blend with N *wit‚ʕ‚∇ 'to find'.

Handout on Nostratic at the University of Pécs, 1995, page 2:



***kälu|ü** 'a woman of the other moiety' (→ 'female relative-in-law', 'bride') > **HS:** S *kall-at- 'daughter-in-law, bride' > BHb כַּלָּה kalˈlā id., JAr כַּלְּתָא kallaˈt̤-ā, Syr W ܟܠܬܐ kallaˈt̤ō, Akk kallātu, Akk A kallatu ~ kallutu id., Ug klt 'Braut, mannbare Tochter', Sb hklln inf. 'to marry (a wife), Mh kəlōn, Jb C/E ˈkəˈlun 'bride, bridegroom', Hrs kəlōnət 'bride', kəlānīn 'bridegroom', Sq {Jo} ˈkəlan 'bridegroom' • KB, Js. D 645, JPS 216, Aistl. WUS #1321, Sod. 426, BGMR 77, Jo. ML 209 • The origin of the element *-n- in New South Arabian is not clear (the hypothesis of a dissimilation *-ll- > -ln- is too speculative) || **K** *ˈkal- 'young woman, maid' > OG kal-i 'daughter, maid' (asa mok̦uda kali ese 'this maid has not died', Mt. 9.24), kala 'maid' (kala ... aɣdeg 'damsel, ... arise', Mark 5.41), G kal-i 'woman, daughter', (čemi \ šeni \ misi) kal-i '(my \ your \ his) wife' • Chx. 1534, Serebr. DGRS 165 || **IE** *g̑ḷōu̯-/*g̑lōu̯- 'brother's wife' > Gk A γάλως, Gk γάλοως 'husband's sister, brother's wife, sister-i-law' (the form γάλοως is due to some morphological reinterpretation, cf. Frisk 286-7, IS OS I 295) ¦¦ L glōs (secondary reinterpretation as an -s-stem, hece gen. glōris) ¦¦ Phr [Hs.] γέλαρος 'brotehr's wife' ¦¦ Sl *zъlɨ (gen. *zъlъve) 'husband's sister' > ChSl ꙁълъвꙗ, SCr zȃova; der.: R зо'ловка id. • : :Pok. 367-8 || **U:** U (or ppU) {Coll.} *kälü ({Itk., Rd.} *kälV-wV, {Janh.} käli-w) 'female relative-in-law' > F käly 'daughter-\sister-in-law' ('Schwägerin, Frau des Bruders, Schwester des Mannes od. der Frau'), Es käli, Δ kälü 'husband's brother, husband's brother's wife' ¦ pL {Lr.} *kālōy- 'kaly', *kālōy-ēnnē [*ēnnē 'mother'] 'sister-in-law' ({Lgk.} 'gegenseitige Verwandschaftsbeziehung der Frauen zweier Brüder') > Lp S {Lr.} gaalluo-, Lp L kālō-ji(e)tnē 'wife of husband's brother or cousin', Lp N gālo-jædne 'sister-in-law (of husbund's brother's wife') ¦ pMr {Ker.} *kāla > MkMr kᵘelʸ 'Schwägerin', ErMr киялo 'жены братьев (по отношению друг к другу)' ¦ Prm {LG} *keli 'wife of husband's brother' > Z kev, Δ kel id., Vt N kaľi 'wife of husband's brother (older than ego)' ('обращение младшей снохи к старшей') ¦¦ Os: Ty kiɬi 'wife's sister', Ty kiɬi, V kuli, D kita, O kili 'husband of wife's sister', Kr kıta 'daughter of wife's younger brother' ¦ Vg: Ss kil 'wife's sister', UL kil 'wife's sister, wife's brother' ¦¦ Sm {Janh.} *kelъ ({ʃJanh.} *kelā) 'relative-in-law' > Nen T O {Leht.} šēɬ, Nen F {Leht.} śi̯e'ɬ 'husband of wife's sister, wife of husband's brother', En X {Cs.} séɬiˀ, B séri 'Schwager', Ng {Cs.} śaluŋ, sealuŋ 'Schwager (die Männer zweier Frauen)', Slq Tz {KKIH} šeɬ 'husband of wife's sister', Slq Nr {Cs. ms., Paas.} šäl 'свояк, Schwestermann, Mann der Schwester des Mannes, Schwager' ¦¦ Y: Y T kelil 'the husband of the wife's sister or female cousin; the wife of the wife's brother or male cousin; the husband of the husband's sister or female cousin; the wife of the husband's brother or male cousin' (I have not find this word in any available source of Y) • Rd. 135-6, Coll. FUV 23, Coll. CG 406 (U *kälü), Coll. JU 78 **РАЗЫСКАТЬ**, Lr. YSS 44-5 [#354], Lgc. LW #1902, Nielsen LO I 38, Keresztes GMK II 52-3, ERV 269, LG 120, KKIH 174, Cs. WSS 67, 90, 277, Paas. B 148 || **A** *kälin 'femle relative-in-law, bride' > T *kälin ({Md.} kĕlᵢᵢn) 'bride, son's wife' > OT kälin id., Chg kelin, XwT kälin, Cum kelın, Az gälin, QrB gelin 'bride', Tk gelin, Qzq келін kelin 'bride, son's wife', Qrql kelin, KzTt kılьn 'son's\young brother's wife; young woman', Trkm/Ggz gelin 'bride, son's wife, young woman (молодица)', Nog kelin, Bshq/Xk kılьn 'son's wife', Uz/Qrg/StAlt kelin id., 'young married woman', ET kelin {Naj.} 'son's wife', {RUjS} id., 'bride', SY kelın ~ kʻelın ~ kʻelin 'bride, wife', Tv kelin 'son's\younger brother's wife', Chv kin id.; Chv {Ashm.} kılantaš 'снохи в доме' (↚ KzTt kılan?) • Cl. 719, DTS 296, Rs. VEW 250, Jeg. 113, Md. ChTG 91, 167, Ashm. VI 216-7, 223 ¦¦ Tg *kelin > Ewk Ag/Skh/Chmk kəlin, Ewk Urm kəli, Lm kəli (pl. kəlin-il), Orc/Nn kəli, Ulc/Ork kəli / kəlin- 'husband of the wife's sister', Neg kəli 'husband of a woman from wife's clan', ScMc keli 'husband of wife's elder sister', 'свояки (вообще)', хехе keli 'wife of the husband's brother' (хехе means 'woman') • SSTMJ I 446 || **D:** ND *kallᵢi, 'female relative-in-law' > Krx xallī 'father's younger brother's wife', Mlt qali 'mother's sister' •• DEDR #1318, Pf. 189 ◇ The meanings 'bridegroom', 'male relative-in-law' are demonstrably secondary and are due either to broadening of meaning (by eliminating the semantic element of female sex) or to back formation (as in Hrs) ◇ IS OS I 295-6 (with further bibliography).

Aharon Dolgopolsky at home with Irén Hegedűs, Pécs, Hungary, October 14, 1995.

Aharon Dolgopolsky: The Semito-Hamitic Scholar and Man

Gábor Takács
Székesfehérvár, Hungary

The painful fact that Professor Dolgopolsky was gone in July 2012 was the heaviest blow to Semito-Hamitic (Afro-Asiatic) comparative-historical linguistics since 1999, when I. M. Diakonoff in St. Petersburg (May) and W. Vycichl in Geneva (September) passed away. The rather neglected field of Semito-Hamitic comparative phonology and lexicon, which owes a lot to these three giants and whose "last Mohican" was Aron Borisovich, has, unlike its brother science, Indo-European linguistics, always been endangered, being cultivated by just a handful of enthusiastic scholars. The person and work of Vycichl,[1] to whom both K. Naït-Zerrad[2] and myself[3] devoted *Gedenkschriften*, can be regarded as a link between the old school of Egyptian etymology hallmarked by the names of A. Ember,[4] F. von Calice,[5] and E. Zyhlarz on the one hand, and modern Semito-Hamitic studies founded by J. H. Greenberg and I. M. Diakonoff, on the other hand.[6]

When Diakonoff (Leningrad) published his epoch-making first attempt at a comparative grammar of the *Semito-Hamitic Languages* (Moscow, 1965, Nauka), two extraordinary young Muscovite linguists had already been heavily engaged in reconstructing the parental phonology and lexicon, two little-studied branches of our vast macrofamily: Dolgopolsky chose Cushito-Omotic, while V. M. Illič-Svityč was working on Proto-Chadic.[7] They both rightly realized that without elaborating the comparative phonologies and lexicons of these branches, there can be no safe reconstruction achieved for the Semito-Hamitic parental language and, henceforth, for Proto-Nostratic either, which was their ultimate goal. Dolgopolsky's *Comparative-Historical Phonology of Cushitic Languages* (1973)[8] has become a fundamental tool testifying to its author's immense knowledge of this new field and his professional treatment of lexical data, although a number of the reconstructions themselves became outdated.

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[1] More on him see in A. Vycichl: Werner Vycichl: éléments biographiques.= Naït-Zerrad, K. (ed.): *Articles de linguistique berbère.* Mémorial Werner Vycichl, Paris, 2002., L'Harmattan, p. 15-17. See also Takács, G.: Werner Vycichl and His Contribution to Afro-Asiatic (Semito-Hamitic) Comparative Phonology and Lexicon.= Morel, Mary-Annick & Danon-Boileau, Laurent & Lonnet, Antoine & Mettouchi, Amina (éds.): Faits de Langues. *Revue de linguistique* nº 27. *Les langues chamito-sémitiques (afro-asiatiques).* Volume 2. Paris, 2006., Ophrys. Pp. 154-171. A list of his works was collected by G. Takács: Publications de Werner Vycichl.= Naït-Zerrad, K. (ed.): *Articles de linguistique berbère.* Mémorial Werner Vycichl. Paris, 2002., L'Harmattan, pp. 19-41. A further version of the biography and the bibliography was published by Mme Armène Vycichl in *Discussions in Egyptology* 54 (2002), 5-33. A bibliography listing the works published by W. Vycichl in 1933-1980 appeared in *Bulletin de la Société d'Égyptologie*, Genéve 4 (1980), 9-18. A third biography appeared in *Wiener Zeitschrift für die Kunde des Morgenlandes* 91 (2001), 9-14.

[2] Naït-Zerrad, K. (ed.): *Articles de linguistique berbère.* Mémorial Werner Vycichl. Paris, 2002., L'Harmattan.

[3] Takács, G. (ed.): *Egyptian and Semito-Hamitic (Afro-Asiatic) Studies in Memoriam Werner Vycichl*. Leiden, 2004., E. J. Brill.

[4] On his life and work see most recently Takács, G.: Aaron Ember and the Establishment of Egypto-Semitic Phonological and Lexical Comparison. Part I-II.= *Acta Orientalia Vilnensia* 6/2 (2005), 78-101 and 7/1-2 (2006), 145-187.

[5] More on him see in Takács, G.: Seventy Years After the First Attempt at Egyptian Etymological Dictionary: Evaluation of F. von Calice's "Grundlagen der ägypto-semitischen Wortvergleichung".= *Lingua Posnaniensis* 48 (2006), 139-163.

[6] To the latter, in collaboration with two other scholars, I edited a memorial volume: Bender, M. L. (chief ed.) & Appleyard, D. & Takács, G. (ed.): *Selected Comparative-Historical Afrasian Linguistic Studies in Memory of Igor M. Diakonoff.* Lincom Studies in Afroasiatic Linguistics 14. München & Newcastle, 2003., Lincom Europa. xii + 323 p.

[7] His Chadic research ended in 1966 unfinished and only his lengthy study on Chadic roots with initial labials could appear, cf. Illič-Svityč, V. M.: Iz istorii čadskogo konsonantizma. Labial'nye smyčnye.= Uspenskij, B. A. (ed.): *Jazyki Afriki. Voprosy struktury, istorii i tipologii.* Moskva, 1966., Nauka. Pp. 9-34. More on his

There soon emerged a natural desire to compile a comparative Afro-Asiatic dictionary jointly with Prof. Diakonoff, who even announced it in his presentation at the 2nd international congress of Semito-Hamitic linguistics (Florence, 1974): "We have planned (in Leningrad and Moscow ...) to prepare a Comparative Historical Lexicon of Afrasian Languages; the project is at present being tutored by Prof. A. B. Dolgopolsky ... and myself ...".[9] This planned joint work of these two giants, however, could unfortunately not lead to any results,[10] since, on 24 September 1976, definitely disappointed by the "administrative anti-Semitism"[11] experienced in Soviet Moscow, Dolgopolsky accomplished his long planned *aliyah*.

In Israel, he continued his fruitful research at Haifa University with some new emphases: on the one hand, he tried to contribute to refining the Semitic reconstruction as the background of Hebrew,[12] which culminated in his monograph analyzing Hebrew in its Semito-Hamitic setting.[13] On the other hand, over these decades, he was preparing his *magnum opus*, the eagerly awaited new comparative dictionary of the Nostratic languages, which was put online (Cambridge) in a number of updated versions towards the last years of his life.[14] Thirdly, and for our research domain most importantly, Dolgopolsky's Israeli decades, especially the 1980s, yielded a series of articles masterfully elaborating the *regular* phonological correspondences of Cushitic language groups (like East Cushitic,[15] South

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Chadic achievements in a critical analysis *apud* Takács, G.: Contribution of V. M. Illič-Svityč to Chadic Comparative-Historical Linguistics.= *Archiv Orientální* 67 (1999), 361-378.

[8] Dolgopol'skij, A. B.: *Sravnitel'no-istoričeskaja fonetika kubitskih jazykov*. Moskva, 1973., Nauka.

[9] Diakonoff, I. M.: Project for a Comparative-Historical Lexicon of Afrasian Languages.= Fronzaroli, P. (ed.): *Atti del Secondo Congresso Internazionale di Linguistica Camito-Semitica*, Firenze, 16-19 aprile 1974. Firenze, 1978., Istituto di Linguistica e di Lingue Orientali, Università di Firenze. P. 43.

[10] Although it was later on continued by a new generation of comparativists in Moscow (A. Ju. Militarev, O. V Stolbova, A. G. Belova, V. Ja. Porhomovskij) guided by Diakonoff along the principles elaborated by Dolgopolsky.

[11] As he formulated himself in his recollections I have recorded in an interview in Haifa on 20 December 2008, where he confessed that this was hostile tendency was "... an administrative one. I was not able, for instance, to become in the Institute of Linguistics a senior research fellow, although many people, even my pupils became senior research fellows. I could not and the leadership of this institute tried to strive for it. I know they tried, I was told, but they were unable to break through the party's district committee or through whatever else there."

[12] Dolgopolsky, A.: Semitic Nomina Segolata in Ethiopic. = Goldenberg, G. (ed.): *Ethiopian Studies: Proceedings of the Sixth International Conference, Tel Aviv*, April 1980. Rotterdam, Boston, 1986., Balkema. Pp. 71-90.

[13] Dolgopolsky, A. B.: *From Proto-Semitic to Hebrew: Phonology. Etymological Approach in a Hamito-Semitic Perspective*. Milano, 1999, CUSCUS.

[14] I had the privilege of contributing to the Semito-Hamitic part of Dolgopolsky's Nostratic Dictionary with *addenda et corrigenda* working together with him during my visits to Haifa in December 2008, December 2009, and November 2010.

[15] Dolgopolsky, A.: Semitic and East Cushitic. Sound Correspondences and Cognate Sets.= Segert, S. & Bodrogligeti, A. J. E. (eds.): *Ethiopian Studies Dedicated to Wolf Leslau*. Wiesbaden, 1983., Otto Harrassowitz.

Cushitic[16]) and Chadic[17] as compared with Proto-Semitic, which resulted in a far higher level of quality than the immense quantity of mostly *ad hoc* etymologies proposed before in comparative studies dealing with the African members of the Semito-Hamitic macrofamily. It was just this handful of minor papers issuing from the third trend of his Israeli research in the 1980s that opened a new era in interbranch comparison focusing on the African relatives and at the same time hallmarking, in my view, the peak of Dolgopolsky's Semito-Hamitic comparative studies ever in terms of quality. He gave us the bipolar model (e.g., of Semito-Cushitic, Semito-Chadic etc. comparison),[18] the only hopeful method I have been following in my Berber, Cushito-Omotic, and Chadic research since 1998.[19]

In my early student years (1989-1991), when I studied Egyptian and some ancient Semitic languages, I only knew of the old literature of Egypto-Semitic comparison by A. Ember, F. von Calice, M. Cohen, and W. Vycichl and others from my old teacher V. Wessetzky and my senior colleague P. Gaboda.[20] I became familiar with the huge progress in Semito-Hamitic comparative-historical linguistics due to pure chance, literally in one single afternoon on 19 June 1992, an unfortunately unforgettable day of my *rigoroso*,[21] after which, disappointed and upset, I found tranquility in the tiny little Oriental Library of the Hungarian Academy. Browsing the newest issues of the journals (among others, that of *Archív Orientální,* eagerly reading the paper by V. Blažek and C. Boisson),[22] I was simply amazed and enchanted by the masses of never-heard new facts and literature of modern Semito-Hamitic and Nostratic linguistics, names like Dolgopolsky, Starostin, Militarev, and Stolbova, perfectly unknown to me before, but whose existence somehow I had always surmised: there was just no one to ask at my

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Pp. 123-142. Dolgopolsky, A.: Semitic and East Cushitic: Word-Initial Laryngeals.= Taddese, B. (ed.): *Proceedings of the Eighth International Conference of Ethiopian Studies, University of Addis Ababa, 1984*. Volume 1. Addis Ababa, 1988., Institute of Ethiopian Studies, Addis Ababa. Pp. 629-637.

[16] Dolgopolsky, A.: South Cushitic Lateral Consonants as Compared to Semitic and East Cushitic.= Jungraithmayr, H. & Müller, W. W. (eds.): *Proceedings of the Fourth International Hamito-Semitic Congress*. Amsterdam, 1987., John Benjamins. Pp. 195-214.

[17] *Dolgopolsky, A. B.: On Chadic Correspondences of Semitic *š.= Mukarovsky, H. G. (ed.): Proceedings of the Fifth International Hamito-Semitic Congress.* Band 1. Wien, 1990. Afro-Pub. Pp. 213-225. Cf. also Dolgopolsky, A.: Chadic-Semitic-Cushitic: Epenthetic -¦- in Sura in the Light of Hamito-Semitic Comparative Linguistics.= Jungraithmayr, H. (ed.): *The Chad Languages in the Hamitosemitic-Nigritic Border Area. Papers of the Marburg Symposion* (1979, Berlin). Berlin, 1982. Dietrich Reimer Verlag. Pp. 32-46.

[18] A prelude to applying this model on a systematic basis is represented by the pioneering paper on *b-, *p-, *f- in Egyptian vs. Angas-Sura (West Chadic) by J. H. Greenberg: The Labial Consonants of Proto-Afro-Asiatic.= *Word* 14 (1958), 295-302.

[19] More on it see *apud* Takács, G.: *Studies in Afro-Asiatic Comparative Phonology (Consonants)*, Berlin, 2011., Dietrich Reimer Verlag, p. 19.

[20] Both scholars worked in the Egyptian Collection of the Hungarian Museum of Fine Arts at that time, in whose library room Prof. Wessetzky (1909-1997) delivered his hieratic lessons in an unforgettable Viennese atmosphere. It was from him that I learnt about the importance of the Viennese school of Egyptology and African linguistics for Semito-Hamitic linguistics and the work of F. Calice and W. Vycichl. It was Péter Gaboda, in turn, who introduced me to A. Ember's fundamental *Egypto-Semitic Studies* (Leipzig, 1930., The Alexander Kohut Memorial Foundation) and the epoch-making *Essai comparatif sur le vocabulaire et la phonétique du chamito-sémitique* by M. Cohen (Paris, 1947, Librairie Ancienne Honore Champion).

[21] A university oral examination closing several semesters' studies. This one in question evokes in me even now ambiguous feelings "thanks" to the hateful behaviour of one member of the committee.

[22] Blažek, V. & Boisson, C.: The Diffusion of Agricultural Terms from Mesopotamia.= *Archív Orientální* 60 (1992), 16-37.

university.[23] There was then no stop any more in my journey to a new world. In autumn 1992 I started to greedily gather the works by the scholars from the Muscovite school of comparative linguistics, whose daring ideas I also had always been dreaming of. The role of Aharon Dolgopolsky as a leading figure of Nostratic and Semito-Hamitic comparative research became evident for me at once.

Very soon, I began to dispatch letters from my Hungarian isolation trying to establish contacts with the different Semito-Hamitic scholars and, while I began an enthusiastic correspondence with both Diakonoff (spring 1993) and Blažek (spring 1994), I was desperate about getting no reply whatsoever either from the Muscovite linguists or Dolgopolsky. With the former I had a chance to get acquainted during my Soros research fellowship in Moscow (September-November 1995), where I learnt more about the latter's person, which was still quite enigmatic for me. Therefore, a couple of months later, the 8th Italian Conference on Afroasiatic Linguistics[24] (Naples, 24-26 January 1996) was a special event for me as it was attended by A. Dolgopolsky too, whom I met there in person for the first time at the Piazza San Domenico Maggiore (where conference members gathered). A couple of days in Naples revealed his profound knowledge, that he was void of snobbery and haughtiness, ready for fierce scientific debates any moment literally day and night anywhere – an absolute scholar, an ideal type I rarely encountered.

Working on my very first volume surveying and analyzing the *Development of Afro-Asiatic (Semito-Hamitic) Comparative Linguistics in Russia and the Former Soviet Union*[25] in the frames of a Research Support Scheme fellowship (Soros Foundation, Prague), I managed to return to St. Petersburg visiting – unfortunately, for the last time – I. M. Diakonoff (October-December 1997) and then to spend one splendid month in Haifa with A. Dolgopolsky (September 1998), which reaffirmed my first personal impressions in Naples. His enthusiasm and working methods stirred within me an even greater desire for etymological research so that I started working already in Haifa on an etymological dictionary of the Angas-Sura (West Chadic) languages.[26]

My Angas-Sura project brought me a year later to Frankfurt with a Humboldt fellowship (July 1999 to December 2000) to Prof. H. Jungraithmayr, the doyen of Chadic linguistics, whose virtues both scholarly and personally were – to my mind – only comparable with those of A. Dolgopolsky. Both scholars had the greatest impact on my work in the following decade. Still in Frankfurt, I collected hundreds of new Semito-Hamitic roots with initial labials and the first lengthy paper of my series "Lexica Afroasiatica" (presenting some 267 new roots with *b-)[27] was dedicated to Aharon Dolgopolsky's 70th birthday, whereas my long study, elaborating the most crucial segments of Semito-Hamitic comparative phonology

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[23] Eötvös Loránd University in the Hungarian capital. Only in summer 1994 have I managed to establish contact with Irén Hegedűs (Janus Pannonius University of Pécs), the only person familiar at that time with the Muscovite comparativists.

[24] 8° Incontro di Linguistica Camito-Semitica. Great thanks are due to our Italian Semiticist and Cushiticist colleagues for managing since the 1980s this series of *Incontros*, the only permanent forum for us in comparative Semito-Hamitic.

[25] Published in München & Newcastle, 1999, Lincom Europa.

[26] Published then in 2004 with the Dietrich Reimer Verlag, Berlin.

[27] Takács, G.: Lexica Afroasiatica I.= *Afrikanistische Arbeitspapiere* 67 (2002), 103-151.

(labials, sibilants, laryngeals) in the consonantally archaic African daughter languages[28], was devoted to that of Herrmann Jungraithmayr. The shocking news about the worsening of Aharon's health in May 2003 also meant he could no longer undertake trips abroad, but it did not change a bit our very intensive contact via phone[29] and email.[30] When my Semito-Hamitic *Doppelfestschrift* for the 75th anniversaries of Dolgopolsky (2005) and Jungraithmayr (2006) finally appeared,[31] I returned – after ten years' gap – to his Haifa home in the Sderot Bat Galim in December 2008 and managed to cheer up Aharon with the volume. On the last day of my stay, I recorded a couple of hours' interview with his recollections.[32] His spirit and mind were brilliant as before, so we could work long hours several days on my *addenda et corrigenda* to his Nostratic Dictionary, which we continued during my two subsequent visits to Haifa in December 2009 and the next year, when I was invited to take part in the celebration of Aharon's 80th jubilee (18 November 2010) among the family members. It was this unforgettable November that I saw him for the last time. Nevertheless, we remained during his last two years in vivid contact.[33] He kept working until the last hours in his huge library room and slept forever among his beloved books.

This is how I knew and witnessed Prof. Dolgopolsky's work and person in the last 15 years of his life from Piazza San Domenico Maggiore to Sderot Bat Galim. In my opinion, Aharon Dolgopolsky was – no exaggeration – a genius. He had working capacities far beyond the normal and an unselfish and eager interest in getting a piece of missing linguistic data and finding the scientific truth, irrespective of what it cost, no matter where he had to travel for making kilos of xero-copies or how high his phone bill was. R. M. Bulatova[34] remembered his nature the same way from the period of their Muscovite life in the 1960s: “Aron proved to be a person capable of great self-sacrifice, a selfless worker, ready to perform any amount of labor in the interests of science.” His enormous vital energies were almost inexhaustible. I was often astonished to see the surprisingly great physical strength hidden in this man of relatively small size. He was passionate, fond of fierce debates, but void of personal or scientific preconceptions, led by the eagerness to learn the objective reality. Gifted with a strong musical talent, he used to sing long hours during our joint journeys. As a Mediterranean lover of life, talented with a great sense of humor, abounding in sparkling anecdotes, he never let any minute pass in boredom. A genuine son of *Mare Nostrum*.

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[28] Takács, G.: Towards Proto-Afro-Asiatic Phonology: Ancient Remnants in South Cushitic, Angas-Sura, and North Bauchi = *Rocznik Orientalistyczny* 54/2 (2001), 55-125.

[29] He was constantly working on his Nostratic Dictionary at his Haifa home literally day and night and called me any time whenever he happened to need some detail.

[30] I am proud of having managed to persuade him (in 2000 during my Frankfurt research) to use this facility at his Department of Hebrew Language and to have been the first one to receive an email from him. A few years later, however, when he retired from the university, he stopped using email.

[31] Takács, G. (ed.): *Semito-Hamitic (Afro-Asiatic) Festschrift for A.B. Dolgopolsky and H. Jungraithmayr*. Berlin, 2008., Dietrich Reimer Verlag.

[32] I have not published the full text as yet. The Russian original was translated into English in 2009.

[33] Mostly via phone or emails his wife Tsippora Fleischer, the famous composer, used to send me from her office (there were scanned attachments containing Aharon's handwritten messages). Although I assisted in setting up a direct internet access in their home in Bat Galim in December 2009, Aharon hardly used it.

[34] Bulatova, R. M.: Illič-Svityč: A Biographical Sketch.= Shevoroshkin, V. V. (ed.): *Reconstructing Languages and Cultures*. Bochum, 1989., Studienverlag Norbert Brockmeyer. P. 22.

MOTHER TONGUE
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In Memory of Aharon Dolgopolsky • אהרן דולגופולסקי זכר לברכה

Aharon Dolgopolsky – Life and Work

Václav Blažek
Masaryk University,
Brno, Czech Republic

Aharon Dolgopolsky [Aron Borisovič Dolgopol'skij] was born into a family of Russian Jews in Moscow on November 18, 1930 and died in Haifa on July 20, 2012. In 1949 he applied for study at the Philological faculty of Moscow State University, but during the time of the anti-Zionist reaction to the founding of the state of Israel (1948) he was rejected. On the other hand, without any problem he was admitted to the Spanish department of the Institute of foreign languages, where he continued in postgraduate study (from 1954) and finally he defended his dissertation (1958) on *nomina agentis* from Latin to the Romance languages.

Till his departure from the Soviet Union for Israel in 1976 he worked in the Academy of Sciences of the Soviet Union. Thanks to the Helsinki Protocols (1975) his emigration was quite legal. In spite of this fact his name had to be eliminated from all Russian libraries and publications edited in the Soviet Union from 1976 on. Some of Dolgopolsky's pupils quoted at least titles of his publications without the name of the author (A. Militarev, O. Stolbova). A positive change was brought only by Gorbachev's *perestrojka* at the end of 1980s.

First of all Dolgopolsky was interested in applications of statistics to lexicon. This interest led him to ask whether similarities between various language families could not reflect traces of their common protolanguage. Thanks to his mathematical erudition he was able to argue that the number of similarities is higher than random. He also mapped various language families from the point of view of the most stable lexemes in their lexicons (##5, 9, 13, 106). At the same time he understood that the anticipated – and not mathematically excluded – distant relationship of language families can only be proven using the same methods which are applied as standard proof of genetic relationship within firmly established language families. In other words, he tried to establish sound correspondences between the reconstructed protolanguages of Afroasiatic, Kartvelian, Indo-European, Uralic and Altaic language (macro-)families, which were assumed by him to be descendants of a common proto-protolanguage (##8, 10, 11).

During this time he found that a young Slavicist, Vladislav M. Illič-Svityč (1934-1966), had led his research in the same direction, taking into account Dravidian as well. For this hypothetical protolanguage Dolgopolsky first offered the term *Sibiro-European*, but he accepted the term *Nostratic,* which was first articulated by Holger Pedersen already in 1903, in agreement with Illič-Svityč. Later Dolgopolsky argued that the term Nostratic is rather 'Nostrato-centric' and the speakers of non-Nostratic languages, *e.g.* of Austronesian, should use the term 'Vestratic' for them. For this reason he chose the term *Boreal*, inspired by the Greek word for "North." Today this term (Boreal or Borean) is used in the sense of a hypothetical ur-ancestor of Nostratic (including Afroasiatic) and Dene-Sino-Caucasian.

Both Illič-Svityč and Dolgopolsky thought that some of so called 'Paleo-Siberian' languages, *e.g.* Yukaghir or Chukcho-Kamchatkan, belonged to Nostratic. Dolgopolsky later added Nivx (Gilyak) and Eskaleutan as well. They were also in agreement that the level of reconstruction was weakest in the case of Afroasiatic at that time. For this reason Illič-Svityč decided to work in the field of Chadic languages and Dolgopolsky specialized in Cushitic languages. Unfortunately, already in 1966 their fruitful cooperation was interrupted by the tragic death of Illič-Svityč, who was knocked down by a car (see #17). On the basis of notes and files of Illič-Svityč their colleague Vladimir A. Dybo was able to prepare for publication three volumes of the Nostratic dictionary (1971, 1976, 1984). Dolgopolsky continued to refine the Nostratic reconstruction (##16, 29, 40, 44, 84). By the beginning of the seventies, fortunately, he did not remain in isolation. The questions of distant relationship became legitimate, later even attractive, and soon Dolgopolsky was surrounded by a group of pupils who formed the Nostratic seminar. At the same time he continued in his research of the Cushitic languages (see ##15, 25, 33, 36, 39, 42, 43, 58, 59, 60, 70, and later 98, 104, 109, 112, 121).

After his emigration from the Soviet Union not only Dolgopolsky's publications, but also the Nostratic hypothesis itself, were designated as 'Jewish linguistics' and repudiated (a historical precedent with Einstein and Freud is more than evident). The Nostratic hypothesis was pushed into illegality, and thanks only to the personal courage of Vladimir Dybo and his daughter Anna Dybo, who organized 'flat seminars',[1] work on Nostratic continued till the time of Mikhail Gorbachev and his *perestrojka*. Thanks only to this thaw, the former teacher and his pupils could meet at the conference on distant relationship organized by Vitaly Shevoroshkin at the University of Michigan in Ann Arbor in 1988.[2]

After Dolgopolsky's move from Moscow to Haifa he began to give lectures about the historical grammar of Hebrew in a Semitic context. His training in accentology (representing the school of his former colleagues Illič-Svityč and V. Dybo) opened for him a new area in Semitic reconstruction also. Dolgopolsky successfully demonstrated that various irregularities in Hebrew and other Semitic languages can be explained on the basis of accentology. The series of his studies devoted to historical phonology and morphology of Semitic (101, 102, 103, 106, 113, 120, 126, 137) was crowned by his 1999 monograph on historical phonetics of Hebrew in Semitic and Afroasiatic context (#135). It is an exceptional study overcoming the traditional, usually only descriptive, level of similar syntheses. In several studies he also focused on Chadic, always in Afroasiatic perspective (## 49, 103, 110, 116). Very valuable is a series of his articles devoted to problems of the Indo-European homeland (##108, 111, 125). He also seriously thought about questions of origin of morphology of the Indo-European and Afroasiatic languages in Nostratic perspective (##40, 45, 105, 123, 143). Aharon Dolgopolsky was a very competent linguist not only in the field of the Nostratic macrofamily. For the 'Great

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[1] *I.e.*, the seminars were conducted in private apartments (flats) rather than in academic buildings [Ed.].

[2] This important gathering was celebrated in our 2008 issue (MT XIII) [Ed.].

Soviet Encyclopedia' he also elaborated entries about *e.g.* Sino-Tibetan (65), Austric (32), Australian (31) and Tasmanian (100) languages and even eleven entries about Amerindian and Nadene languages: Amerindian (57), Athapaskan (35), Aztec (37), Caribbean (64), Guaycuru (51), Mataco-Maca (78), Mayan script (74) & Maya-Zoque (75), Miskito-Matagalpa (81), Nadene (82), Wakashan (41), Zaparo (92). Besides the languages *per se* or their protolanguages he was also interested in general methods of comparative-historical linguistics (##13, 54, 63, 66, 88, 97, 99).

During his last two decades Aharon worked intensively on his life's *opus magnum*, the *Nostratic Dictionary*. Its preliminary version has been available on the website of the University of Cambridge since 2008 (see #144). It is really a monumental work, where on more than 3,000 pages the author analyzes more than 2,800 entries with full material and bibliographical documentation. Thanks to his many-sided linguistic erudition Aharon Dolgopolsky was frequently invited to participate at numerous conferences, where he presented his contributions devoted especially to Afroasiatic languages or the questions of distant relationship.

In the following list of Dolgopolsky's scientific texts both publications and unpublished manuscripts were included, the former numbered, the latter indicated by alphabetic letters.

Monographs and articles

1955
(1) "Protiv ošibočnoj koncepcii "gibridnix" jazykov. (O kreol'skix narečijax)." *Učennye zapiski 1-ogo Moskovskogo gosudarstvennogo pedagogičeskogo instituta inostrannyx jazykov* 1955, t. 7.
1958
(2) "Teorija verojatnosti i ustanovlenie jazykovogo rodstva." In: *Tezisy dokladov konferencii po mašinomu perevodu* (maj 1958). Moskva 1958, 38-39.
(3) *Iz istorii razvitija tipov otglagoľnyx imen dejatelja ot latyni k romanskim jazykam. (K probleme razvitija slovoobrazovateľnyx tipov).* Moskva: Avtoreferat dissertacii kandidata filologičeskix nauk 1958.
1960
(4) "Izučenie leksiki s točki zrenija transformaciono-perevodnogo analiza plana soderžanija v jazyke." In: *Tezisy dokladov na VI plenarnom zasedanii Komissii, posvjaščennom sovremennoj problematike leksikologii i semasiologii* (okt 1960). Moskva 1960, 35-42.
1961
(5) "Statističeskoe izučenie soxranjaemosti leksiki". In: *Tezisy dokladov Mežvuzovskoj konferencii po primeneniju strukturnyx i statističeskix metodov issledovanija slovarnogo sostava jazyka.* Moskva 1961, 87-90.
1963
(6) "Están emparentadas las lenguas de Europa, Asia y Africa del Norte?" *Tlatoani* (México) 1963, 17.
(7) "Kategorija vida v russkom jazyke i verojatnostnyj xarakter svjazi označajuščego s označaemym". In: *Problemy strukturnoj lingvistiki*, ed. S.K. Šaumjan. Moskva: Izdateľstvo Akademii nauk SSSR 1963, 266-281.

1964

(8) *Gipoteza drevnejšego rodstva jazykov Severnoj Evrazii (problemy fonetičeskix sootvetstvij).* Moskva: VII Meždunarodnyj kongress antropologičeskix i ėtnografičeskix nauk 1964, 1-21.

(9) "Gipoteza drevnejšego rodstva jazykov Severnoj Evrazii s verojatnostnoj točki zrenija". *Voprosy jazykoznanija* 1964/2, 53-63.

(10) "Metody rekonstrukcii obščeindoevropejskogo jazyka i vneindoevropejskie sopostavlenija". In: *Problemy sravniteľnoj grammatiki indoevropejskix jazykov*, ed. S.B. Bernštajn & N.S. Čemodanov. Moskva: Izdateľstvo Moskovskogo univerziteta 1964, 27-30.

1965

(11) "Metody rekonstrukcii obščeindoevropejskogo jazyka i sibiroevropejskaja gipoteza". *Ėtimologija 1964* (1965): 259-70.

(12) [translation and remarks] Swadesh, Morris: "Lingvističeskie svjazi Ameriki i Evrazii". *Ėtimologija* 1964 (1965), 271-311 + poznámky A. Dolgopolského 311-322.

(13) "Soxranjaemosť leksiki, universalii i areaľnaja tipologija". In: *Lingvističeskaja tipologija i vostočnye jazyki*. Moskva: Nauka 1965: 189-195.

(14) [chronicle] VII Kongress antropologičeskix i ėtnografičeskix nauk (Moskva, august 1964). *Voprosy jazykoznanija* 1965/1, 132-136.

(a) *Macha Oromo Field Notes*. Moskva 1965-68. Ms.

1966

(15) "Materialy po sravnitel'no-istoričeskoj fonetike kušitskix jazykov: gubnye i dental'nye smyčnye v načal'nom položenii". In: *Jazyki Afriki*, ed. B.A. Uspenskij. Moskva: Nauka 1966, 35-88.

(16) "Nostratičeskie osnovy s sočetaniem dvux šumnyx soglasnyx". *Problemy slavjanskix ėtimologičeskix issledovanij v svjazi s obščej problematikoj ėtimologii*. Moskva 1966, 48-50.

(17) [+ V.A. Dybo] "V.M. Illič-Svityč" (nekrolog). *Izvestija AN SSSR*, serija literatury i jazyka 25/6, 1966, 563-564.

(18) "Jazyki - brať ja, deduški i plemjanniki." *Znanie - sila* 1966/2, 10-14.

(19) "Kak govorili šesť tysjač let tomu nazad." *Znanie - sila* 1966/7, 26-29.

(20) "O jazykovedax i jazykovedenii." In: A.M. Kondratov: *Zvuki i znaki*, Moskva: Znanie 1966, p. 3.

(21) "Pis'mena planety". *Nauka i žizn'* 1966/4, 88-91.

1967

(22) "Ot Saxary do Kamčatki jazyki iščut rodstvennikov". *Znanie - Sila* 1967/1, 43-46.

(23) "V poiskax dalekogo rodstva. *Russkaja reč* 1967/6, 95-112.

(24) "Struktura semitoxamitskogo kornja v sravniteľno-istoričeskom osveščenii". In: *Problemy jazykoznanija*. Moskva: Nauka 1967, 278-282.

(25) "Cushitic roots with the initial **m ~ *b*". In: II *International congress of africanists. Papers presented by the USSR delegation*. Moscow 1967, 3-12.

(26) [+ G.Ja. Turover, I.A. Trista] *Posobye po ustnomu perevodu s ispanskogo jazyka na russkij*. Moskva: Vysšaja škola 1967, pp. 262.

1968

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Václav Blažek
Masaryk University, Brno
Czech Republic
<blazek@phil.muni.cz>

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Already Out-of-Africa before Out-of-Africa? Annual Reflection on Archaeology and Genetics[1]

James B. Harrod
Adjunct Instructor, Maine College of Art
Director, Center for Research on the Origins of Art and Religion

Abstract

New archaeogenetic and archeological studies imply that the mtDNA biological clock requires rescaling and may have serious validity problems and branches of the out-of-Africa mtDNA phylotree itself may need to be realigned. Middle Paleolithic *Homo sapiens sapiens* dispersed with 'modern' symbolic behavior by MIS 5e ~120,000 years ago, 40,000 years before the emergence of L3-mtDNA. Drawing on mtDNA studies, I hypothesize a new paradigm: 'already out of Africa before out-of-Africa'.

By 120,000 years ago (MIS 5e/d), early *Homo sapiens sapiens* spread from the Maghreb to the Levant, and may have had L2'3'4'6 mtDNA. By 100,000 years ago (MIS 5c/b) these Maghreb-Levantine cultures evidence even more extensive symbolic behavior and Tabun-C culture covers most of northern SW Asia. They may correlate to L3'4'6 and L3'4 mtDNA. By 80,000 years ago (MIS 5a) Tabun-C culture was in decline and displaced by the arrival of Neanderthals. L3 could have emerged in a homeland in East Africa, North Africa or even the Levant. After a pause of 5,000 years N, M and R-mtDNA emerged around 69-74 ka at the MIS 5a to MIS 4 transition. Apparently, N moved northward out of SW Asia into Eurasia and appears correlated to Dené-Caucasian languages and M emerged in India or beyond and appears correlated to Eurasiatic languages. R clades migrated all the way to SE Asia/Sahul along with some N clades and this seems to correlate to the Austric and Pama-Nyungan language families. Later in SW Asia R→U clades; some remained in SW Asia and others spread to Europe, North Africa, and South Asia; they possibly correlate to early forms of Semitic, Dravidian and Kartvelian. Notions of a 'fast track' to Australia and drawing a single or even a couple of arrows from East Africa to Australia are no longer tenable.

Broken Clock

It appears that genetic studies published in 2012 have yielded results that are stunningly self-contradictory and have put the field of out-of-Africa mtDNA archaeogenetics and archaeology in disarray. They call into question a decade of findings. The new studies have caused me to reconsider a tentative inference I made in the 2011 issue of *Mother Tongue* that there were multiple diffusions from Africa. In this paper I review selected studies and offer a new hypothesis: 'Already Out-of-Africa Before Out-of-Africa'.

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[1] **Editor's Note:** The author is well aware (as he himself takes pains to state) that his proposals are innovative and vary from some of the widely accepted models. Many linguists will find the author's "language hypotheses" anachronistic and incompatible with prevailing views of linguistic dating. Any reader who would like to comment on these proposals is welcome to send the Editor a review article or letter for publication in the next issue.

As I noted last year, Soares, Ermini et al (2009) provides a global overview of mtDNA phylotree and the most up-to-date molecular clock dating procedures for determining the major haplogroups TMRCAs for the entire tree. It adheres to the view that L3-mtDNA remained in Africa and N and M diffused to SW Asia, while reducing the TMRCA to ~72 ka.

- Soares P, Ermini L, Thomson N, Mormina M, Rito T, Röhl A, Salas A, Oppenheimer S, Macaulay V, Richards MB. 2009. Correcting for purifying selection: an improved human mitochondrial molecular clock. *American Journal of Human Genetics* 84(6): 740-59.

Stephen Oppenheimer (2012a) argues that Soares, Ermini et al (2009) as still the 'gold standard' and sticks to L3-mtDNA emergence in Africa ~71.6 ka and South Asia N ~71.2 ka and M 49.4 ka and excludes any Eemian exit as lacking progeny (778). Oppenheimer (2012b) acknowledges that modern humans first dispersed circa 125 ka and may have spread via Arabia to the Far East at the same time, but there is "no evidence of surviving non-African DNA lineages dating from anywhere near the Eemian." Because of the lack of fossil evidence and disputed genetic dates with wide confidence intervals, there is as yet no definitive exit date, but all non-African uniparental lineages derive from L3 as a single group by the southern route, likely via Yemen. Since M and N are 4 and 5 mutations away from African L3 there was a long period of drift and extinction in both lineages after the founding event, with 10,000 years implied by the Soares et al (2009). Oppenheimer notes that two clades of L3 and M and N share a transition at position 195, and this would recalibrate M and N to same time period as L3 around 72 ka.

- Oppenheimer S. 2012a. Out-of-Africa, the peopling of continents and islands: tracing uniparental gene trees across the map. *Philosophical Transactions of the Royal Society of London B Biol Sci.* 367(1590): 770-84.
- Oppenheimer, S. 2012b. A single southern exit of modern humans from Africa: Before or after Toba? *Quaternary International* 258: 88-99.

With respect to corroborating the late 72 ka out-of-Africa date in relation to East and SE Asian fossils and rejecting an Eemian exit, Oppenheimer (2012a,b) excludes Zhirendong, South China, on morphological grounds, a 'robust between early modern *Hss* and late archaic *Hs'* and possibly 'as the authors suggest hybridisation'. [Liu, Jin et al (2010) found U-series age 106±7 ka consistent with faunal remains and compare morphological measurements of mandible and dental features variably close to a range of human groups from archaic *Homo sapiens* to Skhul/Qafzeh and Sub-Saharan MSA.] I wonder if this is a bias against 'robustness'? Oppenheimer (2012b) also discounts an *Hss* fossil from Callao, Luzon, U-series minimum 66.7±11 ka (Mijares, Détroit et al 2010) arguing that morphologically the species designation is unclear. [Mijares et al state their morphological analysis shows definitely small-boded *Homo*, such as *H. habilis* and present-day Negritos.]

Soares, Alshamali et al (2012)—with mostly the same research team as 2009 minus Oppenheimer—reanalyzed African mtDNA samples and this resulted in a further lowering of the genetic age of 'expansion' of L3 to 65±5 ka "virtually ruling out a successful exit before 74 ka, the date of the Toba volcanic supereruption in Sumatra."

- Soares P, Alshamali F, Pereira JB, Fernandes V, Silva NM, Afonso C, Costa MD, Musilová E, Macaulay V, Richards MB, Cerny V, Pereira L. 2012. The Expansion of mtDNA Haplogroup L3 within and out of Africa. *Molecular Biology and Evolution* 29(3): 915-27.

This study (Fig. 1) actually gives age estimates for N-mtDNA 61.9 ka and M-mtDNA 60.5 ka, and the map (Fig. 5) shows date M and N exodus 'out-of-Africa' over the Bab-al-Mandeb 55-65 ka. Focused on Africa it does not comment on southern Asian archaeology, which, I suggest, appears to contradict such a low date for out-of-Africa and would appear to be an objection to Oppenheimer's sticking to the ~72 ka date for out-of-Arica.

Adding to the upheaval in out-of-Africa modeling, Soares, Alshamali et al (2012) make no reference to archaeology in SW Asia other than Skhul/Qafzeh and now argue for decoupling evidence of symbolic behavior from L3-M-N mtDNA dispersal out-of-Africa.

In their discussion, Soares, Alshamali et al (2012) suggest a possible alternative to the their inference of 55-65 crossing of the Bab, namely a North African origin of L3, only to rule it out based on the results of their proposed dating of L3.

> "There is an intriguing possible rider to this conclusion. North Africa has been entirely depopulated and repopulated, at least with respect to mtDNA variation (Pereira et al. 2010), since the time of the Aterian industry, where modern symbolic behavior is attested very early, similar to Southern Africa and in contrast to Eastern Africa (Barton et al. 2009). We might therefore contemplate a possible North Africa ancestry for L3, with its rapid radiation corresponding to an early range expansion into Eastern Africa. However, any potential dispersal between the Mediterranean and the Horn of Africa around the time of the MIS4/3 transition would face severe environmental difficulties, unlike the ''green Sahara'' conditions of MIS5 and the early Holocene (Drake et al. 2011). We therefore conclude that an indigenous origin for L3 in Eastern Africa remains by far the most likely scenario" (924).

It seems to me that this caveat ignores the obvious fact that the same "severe environmental difficulties"—namely severe drought conditions—that might inhibit L3 diffusing from North Africa to East Africa occurred in SW Asia at the same time. If so, then by this Soares argument out-of-Africa by the Bab would be an equally unsupportable inference. I sense the desperation of those still holding on to a broken mutation clock.

Broken Branch

Given the conflicting archaeogenetic studies on L3-M-N out-of-Africa, I took a closer look at how the studies identify the SNPs used to define L3. Oppenheimer (2012) and Soares, Ermini et al (2009) and Soares, Alshamali et al

(2012) and Behar and van Oven et al (2012) all state that they are using the international standard van Oven and Kayser (2009) and their revised Phylotree Builds (which have the same L3 SNPs from the 2009 build to present), namely SNPs 769, 1018, 16311). While Behar and van Oven et al (2012) use these SNPs, Soares, Ermini et al (2009) and reiterated Oppenheimer (2012a,b) has phylotree L3 (SNPs 766, 1018, but not 16311)→L3+195→L3subclades including M and N. Oppenheimer (2012b) includes M and N and 'two other clades' under SNP 195. Soares, Alshamali et al (2012, Supplementary Material) defines L3 by SNP 16233, apparently a change from (2009), and with no reference to L3+195 and has 195 scattered across over a dozen subclades of L3.

To my mind this raises doubts about what exactly the phylotree branches are for L3 and its ancestors and subclades. In the section next Behar and van Oven et al (2012) note clock violations around L3 and to my mind this raises further doubt about the Phylotree. I would hope that future research studies by archaeogeneticists might deal with the discrepancies, which I presume affect the reliability of their phylotree and TMRCA dating that depends on it.

Broken Clock Again

Three 2011 and 2012 studies have seriously called into question the Soares et al 'gold standard' mtDNA mutation clock used to calculate the TMRCAs of haplogroups for out-of-Africa. Langergraber, Prüfer et al (2012) using revised generation spans for chimpanzees and humans calculate the chimpanzee/human divergence (CHCLA) at between 7 to 13 mya. In this light they rescaled four prior studies to show—by my calculation—an average split time (low) 7.71 mya to (high) 12.55 mya.

- Langergraber KE, Prüfer K, Rowney C, Boesch C, Crockford C, Fawcett K, Inoue E, Inoue-Muruyama M, Mitani JC, Muller MN, Robbins MM, Schubert G, Stoinski TS, Viola B, Watts D, Wittig RM, Wrangham RW, Zuberbühler K, Pääbo S, Vigilant L. 2012. Generation times in wild chimpanzees and gorillas suggest earlier divergence times in great ape and human evolution. *Proceedings of the National Academy of Sciences USA* 109(39): 15716-21.

Soares et al (2009) used the then best chimpanzee/human divergence date of 6.5 mya + 0.5 mya for coalescence date = 7 mya. If we round up the new CHCLA ~8 mya + 0.5 mya for coalescence = 8.5 mya, that yields a multiplier of 1.2, which can be applied to Soares et al haplogroup TMRCAs. Applying this multiplier would raise Soares' 65 ka TMRCA date for L3 to around 80 ka.

Scally and Durbin (2011) show how next-generation and nuclear DNA sequencing, as opposed to the traditional method of sequencing a small mtDNA reference section, reveals a slower than expected genome mutation rate, which increases the timescale of human evolution. They rescale estimates of the nuclear DNA divergence between Africans and non-Africans, putting this date at 100-120,000 years ago.

- Scally A, Durbin R. 2012. Revising the human mutation rate: implications for understanding human evolution. *Nature Review Genetics* 13(10): 745-53.

If so, this would appear to decouple genetic 'out-of-Africa' from the diffusion of L3, and do so even with a CHCLA rescaled Soares date of 80 ka.

To cap the archaeogenetic chaos of the last year, Behar, van Oven et al (2012) begin what they term a 'Copernican re-assessment'; they re-orient reconstruction of the *Homo sapiens sapiens* phylotree to an Africa-based reference sequence as opposed to the Cambridge sequence which belongs to haplogroup H2a2a. This requires re-counting mutations along the phylotree branches, which affects some, though not all, prior date calculations.

- Behar DM, van Oven M, Rosset S, Metspalu M, Loogväli EL, Silva NM, Kivisild T, Torroni A, Villems R. 2012. A "Copernican" reassessment of the human mitochondrial DNA tree from its root. *American Journal of Human Genetics* 90(4): 675-84

At the same time, they demonstrate that use of a continuous mutation rate molecular clock for mtDNA, such as that used by Soares, cannot pass a basic test of statistical validity. Further, when Behar does apply the continuous rate clock 'for the sake of sheer interest' it yields multiple clock violations (child clades older than parent clades), including—and alas for out-of-Africa hypotheses—clock violations between L3'4 and its two branches L3 and L4. (Apparently adding to the problem, As I noted in previous section, Behar, Soares 2009 and Soares 2012 use different SNP mutation definitions for L3 though stating in their narrative they are using the van Oven and Kayser Phylotree.)

> Behar, van Oven et al (2012) **L3'4'6** 71±6 ka → **L3'4** 64±5 ka → **L4** 79±7 ka (older than grandparent) and **L3** (SNP 769, 1018, 16311) 67±4 ka (older than parent);
> Soares, Ermini et al (2009) **L3'4'7'6** (L3'4'6 not in Soares phylotree) 105±24 ka → **L3'4'7** (L3'4 not in Soares phylotree) 86±20 ka → **L4** (does not date) and **L3** (SNP 766, 1018) 71.6±15 ka;
> Soares, Alshamali et al (2012) [L3 SNP 16223] **L3** 65±5 ka
> For what its worth, if we eliminate the outliers for L3'4'6('7) and L3'4, namely 105 ka and 64 ka, then the range for that cluster is 71 to 86 ka. Similarly, if we take L4 and L3 as a cluster and eliminate its outliers (79 and 65 ka) the range for that cluster is only 67 and 65 ka, average 66 ka; or if averaging all four dates, 71 ka.

The most extreme TMRCA clock violations occur with respect to the M branch of L3—M diffused across South Asia, SE Asia, Central and E Asia—implying it must have had significantly variable rates of mutation over the course of its evolution. (I wonder if Toba might also play a role in the clock violations.)

In sum, as of 2012 the field of out-of-Africa archaeogenetics seems in deep disarray. One can only wonder how long it will take the field to right its ship. What might be the way out of the chaos?

Already Out-of-Africa Before Out-of-Africa?

Some new archaeological discoveries suggests a new paradigm for out-of-Africa might be emerging which shifts the focus from some sort of 'out-of-Africa from East Africa across the Bab-al-Mandeb' to 'out-of-North-Africa into SW Asia via the Sinai'. I note three recent studies.

A new Tabun-C industry site—the same industry as Skhul and Qafzeh—is reported for Jebel Qattar, Jubbah paleolake, Nefud Desert, No. Arabia (OSL) 75±5 ka (Petraglia et al 2012)

- Petraglia MD, Alsharekh A, Breeze P, Clarkson C, Crassard R, Drake NA, Groucutt H, Jennings R, Parker AG, Parton A, Roberts RG, Shipton C, Matheson C, al-Omari A, Veall M-A. 2012. Hominin Dispersal into the Nefud Desert and Middle Palaeolithic Settlement along the Jubbah Paleolake, Northern Arabia. *PLoS ONE* 7(11): e49840.
- Petraglia MD, Alsharekh AM, Crassard R, Drake NA, Groucutt H, Parker AG, Roberts RG. 2011. Middle Paleolithic occupation on a Marine Isotope Stage 5 lakeshore in the Nefud Desert, Saudi Arabia. *Quaternary Science Reviews* 30(13–14): 1555–1559.

With this new site there are now at least 10 sites in SW Asia with Middle Paleolithic Tabun-C industry, which is associated at two sites, Skhul and Qafzeh, with *Homo sapiens sapiens* 'with robust features'. Four of these sites have 'modern symbolic behavior', including shell beads, multiple hues of pigments, burials, grave goods, and stone artifacts incised with deliberate markings (crisscross lines, parallel stroke marks). Dates range from the 'C' Layers at Tabun Cave (~165-220 ka) to Hayonim Cave, Israel (150 ka) to Skhul (100-130 ka) down to the new site of Jebel Qattar 75±5 ka. When only the coastal sites in Lebanon and Israel were known—and it was erroneously believed that 'modern' *Homo sapiens sapiens* migrated out-of-Africa around 45 ka—it was assumed that the Tabun-C culture and its hominins were a cultural and genetic 'dead end'. Now we have sites spanning much of SW Asia from the coast to Aïn Hummal, El Kowm, central Syria (with 2 TL dates of 98±16 and 128±18 ka), only 50 miles from the Euphrates and now Jebel Qattar on a paleolake in northern Arabia, with watersheds to the Persian Gulf and back to the Red Sea. In short, it looks like the Tabun-C culture 'controlled' much of SW Asia and possibly the routes to South Asia via the Persian Gulf Oasis. To confirm this we need Middle Paleolithic sites from Iraq and the Oasis area, but no such sites have been excavated.

The Aterian (with tanged points and scrapers as its type tool) across North Africa, which in the early days of 14C dating was thought to date less than 45 ka, has been substantially redated across North Africa. A key site pushing back Aterian dates is Ifri n'Ammar (Morocco) (TL) MSA with tanged items as well as personal ornaments (shell beads) 83.3 ± 5.6 kya; MSA lacking tanged pieces, 130.0 ± 7.8 kya; early MSA with tanged items—the now earliest known appearance of tanging, 145 ± 9 kya. (Richter, Moser et al. 2010). Grotte des Pigeons, Taforalt, NW Algeria has yielded red ochred shell beads (OSL, U-series, and TL) between 73.4 and 91.5 ka with likely date ~82.5 ka (Bouzouggar, Barton et al 2007). Oued Djebbana, Bir-el-Ater, Algeria, the Aterian type site (so far only 14C date >40 ka) produced perforated shell beads, which were recently reanalyzed; they have the same perforation pattern as Skhul beads, inferring trade exchange or common ancestry across North Africa into SW Asia (Vanhaeren, d'Errico et al 2006).

- Vanhaeren M, d'Errico F, Stringer C, James SL, Todd JA, Mienis HK. 2006. Middle Paleolithic Shell Beads in Israel and Algeria. *Science* 312: 1785-1788.

Hublin and McPherron (2012) represent a major re-assessment of North African Middle Stone Age archaeology and paleontology.

- Hublin, Jean-Jacques (ed), McPherron, Shannon P. (ed). 2012. *Modern Origins: A North African Perspective* (Vertebrate Paleobiology and Paleoanthropology). Springer.

Its overall thesis is summarized in a Letter to the journal *Science*, Hublin and Klein (2011):

> "… fossils and archeology show that the Aterian people, who simultaneously occupied northwestern Africa, were comparably modern or near-modern. In addition, Aterian craniodental fossils resemble fossils dated between roughly 120,000 and 90,000 y ago at the Skhul and Qafzeh Caves in Israel, as well as fossils dated to about 40,000 y ago from the Peştera cu Oase (Cave with Bones) in Romania. In morphological details, the Peştera cu Oase fossils further resemble a fully modern skull dated to roughly 37,000 y ago at Nazlet Khater, Egypt. The fossil similarities matter, because the Skhul/Qafzeh people are often thought to signal a precocious spread of modern Africans to southwestern Asia, whereas the Peştera cu Oase people are believed to represent an early wave of modern African migrants to Europe. Fossils therefore suggest that northern Africa must also be considered as a possible source for the modern human expansion."

- Hublin J, Klein R. 2011. Northern Africa could also have housed the source population for living humans. *Proceedings of the National Academy of Sciences USA* 108(28): E277.

In reviewing the North African Middle Stone Age, Scerri (2012) applies a principal components analysis to six lithic assemblages across North Africa labeled Aterian, Early Nubian Complex and MSA, which reveals regionalized population structure and social boundaries more or less permeable rather than geographic isolation or behavioral adaptation differentiates Maghreb Aterian, Haua Fteah uniqueness, NE African Aterian and Nubian, which overlap. Scerri concludes that tanged tools cannot serve as the main criterion for the 'Aterian' technocomplex.

- Scerri, Eleanor ML. 2012. The Aterian and its place in the North African Middle Stone Age. *Quaternary International* in press (online).

Clarkson, Jones and Harris (2012) analyze lithic assemblage variability comparing 867 cores including those from sites in Jurreru Valley Andhra Pradesh, including Jwalapuram, to South Africa to Australia. Conducting a Discriminant Function Analysis they find four clusters: (1) Indian Late Acheulian (Middle Son Valley), Neanderthal, East African MSA and early Hss from North Africa and the Levant; (2) SW Asia and Aurignacian circa 40 ka; (3) Indian microlithic; and (4) South Africa MSA, Jurreru Valley pre-and-post Toba, East Timor and oldest Australian sites. They associate out-of-Africa with the latter.

- Clarkson C, Jones S, Harris C. 2012. Continuity and change in the lithic industries of the Jurreru Valley, India, before and after the Toba eruption. *Quaternary International* 258: 165-179.

While the authors argue they have provided lithic evidence to support out-of-East-Africa to Sahul by the southern route and lean against North-Africa and the Levant, I find their analysis problematic. First, they are forced by their analysis to hypothesize that South Africans went to East Africa and crossed the Bab and from there eastward, while ruling out East Africans crossing the Bab, for which I know of no archaeological evidence for such a back migration. Second, Table 9 lists the lithic assemblages by site. There is no comparative lithic assemblage for NE Africa Nubian, Nile Denticulate or MP with handaxes, for which dispersal sites exist neither in SW Asia nor for southern Arabian local MP sites; this leaves open the question how they might cluster and affect the conclusions. Also the analysis appears to support not one, but two dispersals out of Africa: one during MIS 5e/d linking East Africa, North Africa and the Levant (Skhul and Tabun early *Hss*) and further dispersal into India (termed 'Late Acheulian', but by others 'early MP'); a second circa MIS 5a linking South African MSA to pre-and-post Toba Indian MP and on to sites in Sahul.

Dennell and Petraglia (2012) 'the increasing likelihood' for more than one dispersal from both North and East Africa as well as admixture from other species including Neanderthals, Denisovans and *Homo erectus*.

- Dennell R, Petraglia MD. 2012. The dispersal of Homo sapiens across southern Asia: how early, how often, how complex? *Quaternary Science Reviews* 47: 15-2.

From the perspective of mtDNA, Oppenheimer (2012b) argues that this multiple dispersal view is falsified by the genetics, which requires a single dispersal of L3 derived lineages. One caveat I note: when Dennell and Petraglia discuss Shi'bat Dihya, Yemen as a key out-of-Africa site with 'E. African and Levantine Mousterian affinity, though idiosyncratic', this is contradicted by the site report to which they refer, since its authors state that the MP assemblage has no clear affinity to E Africa, some affinity to Jebel Faya B but not Tabun-B Neanderthal assemblages and thus is a local industry, which they take to be evidence against out-of-Africa into Yemen circa 50-60 ka.

- Delagnes A, Tribolo C, Bertran P, et al. 2012. Inland human settlement in southern Arabia 55,000 years ago. New evidence from the Wadi Surdud Middle Paleolithic site complex, western Yemen. *Journal of Human Evolution* 63, 3: 452–474.

Discussion

Given the preceding studies how are we to conceive the prehistory of out-of-Africa? While I myself in 2011 had thought there were multiple diffusions out of Africa, I here retract this model. In the light of the 2012 archaeogenetic-archaeological studies I have reviewed I suggest a revised model and timeline for out-of-Africa: 'Out-of-Africa Before-Out-of-Africa.

North-Africa-Levantine MSA/MP Mosaic of Regional Cultures. The new evidence supports the view that there was a mosaic of regional Middle Paleolithic/Middle Stone Age cultures spanning from the North African Maghreb ('Aterian') to the SW Asian 'Tabun-C' culture, and including Egyptian 'Aterian' and 'Nubian Complex' and these regional cultures have a common ancestry and/or trading exchange and possibly social alliances. All these North African-Levantine cultures are associated with *Homo sapiens sapiens* 'with robust features'. This new view actually validates the analysis of Gruet (1954) at Aïn

El-Guettar, Tunisia, in which he found the closest analogy for the Guettar 'Mousterian' tool assemblage to be Tabun C and Qafzeh F level tools; Gruet also gives a detailed description of the symbolic 60 spheroid stone heap at the site.

Intertribal Contact/Trade 'African affinity' Sites. Given this mosaic, I suggest that recently discovered sites in southern Arabia, Sinai and Negev with tool assemblages having 'African affinities' may correspond to (a) intertribal trade exchange between Africans and the Tabun-C peoples, possibly evidenced by symbolic items (shell beads, etc.), and (b) African out-migrations in southern Arabia that did not penetrate or go beyond Tabun-C controlled northern SW Asia. To date, these 'contact' or 'affinity' sites include at least four distinct lithic cultures:

- 'MP-with-handaxes' at Jebel Faya, U. A. E., mean of 3 dates ~112 ka (eliminating outliers, 123±10 ka) (Marks 2009; Armitage et al 2011);
- 'Early Nubian complex' (in Africa associated with early *Homo sapiens sapiens*) at Aybut Auwal, southern Oman (weighted mean, OSL) 107±6 ka (Rose, Usik et al 2011)
- 'Early Nubian complex' at Gebel Urayf an Naquah, central Sinai (14 miles from Har Karkom, central Negev, Israel), no date (Schild in Eddy 1999, site noted in Rose, Usik et al 2011);
- 'Nile Denticulate Mousterian' at Sinai-20 Split Rock Site, Wadi al Madibah, Zarnoq area, central eastern Sinai, about 30km from Taba on Gulf of Aqaba, Red Sea, (TL) Lower 84.5±13 ka, Upper 61.5±8.6 ka (Kobusiewicz, Schild, Bluszcz and Wendorf 2001; Kobusiewicz in Eddy 1999); compare Nile Denticulate at Nazlet Khater NK-2, Lower Nile, Upper Egypt (geostratigraphy) ~100 ka (Van Peer 1998);
- 'Aterian' at Har Karkom, Negev, Israel, at least 2 sites, HK148b, HK72a, no date (Anati E, 2006 online)

There is no archaeological or paleontological evidence that any of these cultures went beyond the locations identified. Rose, Usik et al (2011) even suggest that the Early Nubian Complex at Aybut Auwal, Oman, was a migratory dead end; but they add that it might correlate to L3'4'6-mtDNA, though fossil evidence for any theory is lacking.

Timeline of Out-of-Africa with Archaeological, mtDNA and Language Correlations. Considering the implications of these studies, I propose four-stages in the prehistory of *Homo sapiens sapiens* 'out-of-Africa'. First, I summarize key archaeological sites between North-and-East Africa and the Levant focusing on three successive interglacial humid periods MIS 5e, 5c and 5a, which are each about 20,000 years in duration including their following arid phases. In accord with the Sahara pump model for faunal dispersion from Africa to the Levant during humid phases, I suggest these three time periods were optimally conducive to human dispersion (in both directions); and the archaeology appears to support this. Second—setting aside the Behar, van Oven et al (2012) caveat doubting any biological clock currently available—I hypothesize correlations to mtDNA haplogroups by rescaling Soares TMRCAs based on the revised CHCLA multiplier 1.2. Third, even more tentatively I suggest some possible language correlations based on current mtDNA population samples in North/East Africa and Levant/Arabia and their current languages, which, of course, assumes at least limited language continuity over one-hundred thousand years.

1. MIS 5e (~130-117, high sea level 125-128) and MIS 5d (~115-106 ka). Archaeology *(Figure 1).* A mosaic of regional Middle Stone Age cultures ranging across North Africa and Levant, some with evidence of 'modern' symbolic behavior, such as:
    - Morocco:
        - Benzú, >70 ka to 168 ka (probably 5e and 5c humid?) and ~170 ka, Levallois Mousterian
        - Jebel Irhoud, early *Homo sapiens sapiens* 160 ka, closest morphology Skhul, slightly more primitive features, and associated with Levallois Mousterian tools
        - Ifri n'Ammar Lower OS Level, 130 ka, MP without tanged tools
        - Dar es-Soltan II-7, *Homo sapiens sapiens* 121 ka, closest morphology Qafzeh; Aterian, 'enigmatic' heap of sandstone slabs H 30cm, W 1m;
        - Grotte des Contrebandiers L13d, 122 ka, Levallois Mousterian
    - Aïn El-Guettar, Tunisia, probably ~120 ka, Aterian
    - Haua Fteah, Libya, Levallois Mousterian
    - Bir Tarfawi, SW Egypt, MIS5e, Aterian
    - Sai Island, northern Sudan, <153 ka, Nubian Complex with Lupemban features; K'One, Ethiopia, 140 ka, Levallois and Nubian Complex; Kharga Oasis, Egypt, <125 ka, Nubian Complex; Sodmein, Egypt, 118 ka, Nubian Complex
    - Mumba Shelter, Tanzania, VIB 110 to 132 ka, MSA Levallois
    - Mumbwa Caves, central Zambia, MIS 5e, MSA, with blocks of local hematite showing grinding and scraping; probable natural anthropomorphic stone
    - SW Asia Early Tabun-C industry sites, such as
        - Hayonim Cave, Israel, 150 ka;
        - Skhul, 100-130 ka, red, orange, yellow pigments, some heated to change colors from yellow to red; marine shells not related to food acquisition; *Homo sapiens sapiens* 'with robust features', 10 MNI depositions and 'burials', 1 with boar mandible; perforated shell beads similar to North African Aterian beads;
        - Aïn Hummal, El Kowm, central Syria, Level 5g 128 and 98 ka
    - SW Asia non-Tabun C sites, such as
        - Abdur, Eritrea, 125 ka, MSA with handaxes,

- Jebel Faya, UAE, mean ~112 ka, or eliminating outliers, 123 ka, MP with handaxes, foliates
- Har Karkom, Negev, multiple Mousterian sites with handaxes, designated 'Mousterian of Acheulian Tradition', [candidates for zoomorphic / anthropomorphic portable rock art—*JBH*]

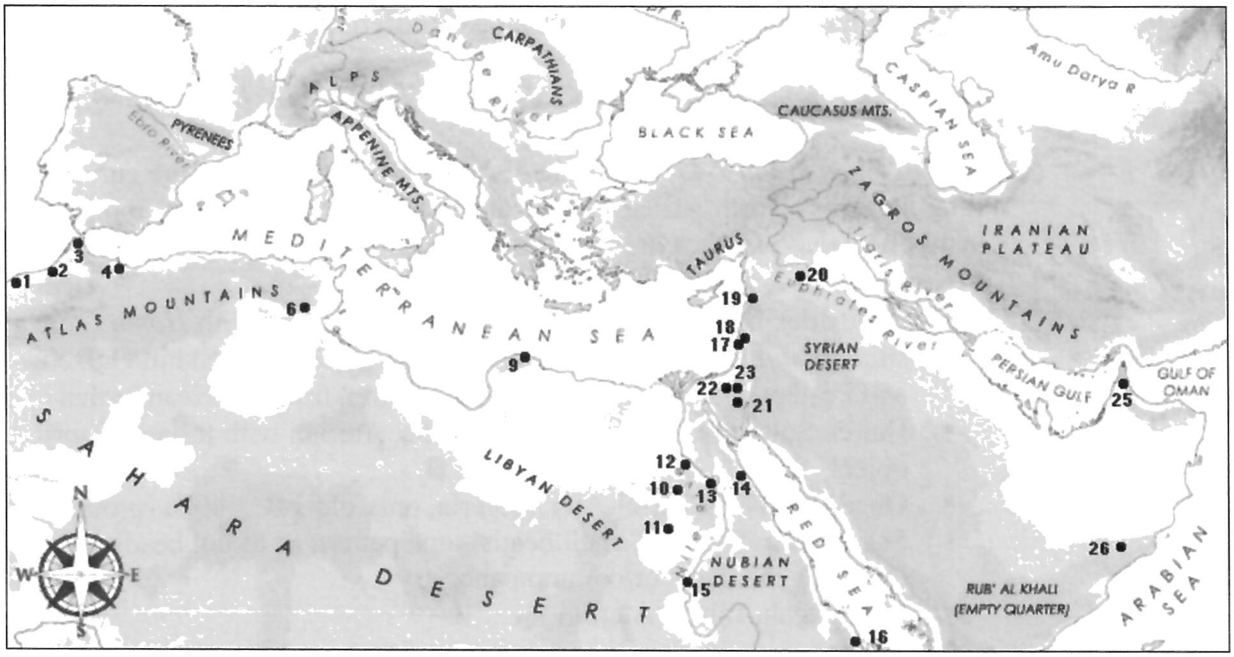
CARPATHIANS
Danube River
ALPS
PYRENEES
Ebro River
APPENINE MTS.
BLACK SEA
CAUCASUS MTS.
CASPIAN SEA
Amu Darya R
ZAGROS MOUNTAINS
IRANIAN PLATEAU
TAURUS
Tigris River
Euphrates River
MEDITERRANEAN SEA
ATLAS MOUNTAINS
SYRIAN DESERT
PERSIAN GULF
GULF OF OMAN
LIBYAN DESERT
SAHARA DESERT
NUBIAN DESERT
RED SEA
RUB' AL KHALI (EMPTY QUARTER)
ARABIAN SEA
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Figure 1. MIS 5e/d and 5c/b sites, dated and associated by fossil or tool with early *Homo sapiens sapiens*. 1, Jebel Irhoud. 2, Dar es-Soltan and Grotte des Contrebandiers. 3. ~~Mugharet el Aliya~~ and Benzú. 4, Ifri n'Ammar. ~~5, Grotte des Pigeons, Taforalt.~~ 6. Aïn El-Guettar and Oued Djebbana. ~~7, El Akarit. 8, Uan Afuda.~~ 9, Haua Fteah. 10, Kharga Oasis. 11, Bir Tarfawi and Bir Sahara. 12, Nazlet Khater. 13, Taramsa. 14, Sodmein. 15, Sai Island. 16, Abdur, Eritrea. 17, Skhul, Tabun, and Kebara. 18, Qafzeh and Hayonim. 19, Nahr Ibrahim and Ras-el-Kelb. 20. Aïn Hummal, El Kowm. 21, Sinai-20 Split Rock. 22, Gebel Urayf an Naquah (no date). 23, Har Karkom (no date). ~~24, Jebel Qattar.~~ 25, Jebel Faya. 26, Aybut Auwal. [Strikethrough sites are MIS 5a sites not shown on this map.] (map modified from Ancient World Mapping Center)

mtDNA Hypothesis:

(a) L2'3'4'5'6-mtDNA → L2'3'4'6 + L5, emergent in E Africa (111±8/12 ka Behar, van Oven [2012 with revised CHCLA x 1.2 = ~133 ka.

(b) L0a'b'f-mtDNA, emergent in E Africa (100±10 ka Behar, van Oven [2012] with revised CHCLA x 1.2 = ~120 ka.

Language Hypothesis (very speculative): Based on mtDNA haplogroup frequencies in current populations, this might be some predecessor to the Nilo-Saharan family. I note that L2'3'4'6 is the result of L5 branching off of the preceded haplogroup L2'3'4'5'6. In current African populations L5 has a high frequency in Mbuti (Central Sudanic speakers). It may be relevant to this point that L0a'b'f, which arose about 10,000 years after L2'3'4'6 has a high frequency in Datoga (Eastern Sudanic speakers).

2. MIS 5c (~106-93 ka Brørup) and MIS 5b (~93-85 ka)

Archaeology *(Figure 1).* A mosaic of regional Middle Stone Age cultures ranging across North Africa and Levant, many with evidence of 'modern' symbolic behavior, such as:

- North Africa 'Aterian *sensu lato'*
  - Grotte des Contrebandiers L9/10, 107 ka, Aterian, with *Homo sapiens sapiens* teeth 'with robust features', closer to Skhul/Qafzeh and Peştera cu Oase, Romania, than South African or Neanderthal
  - Dar es-Soltan I-G2, *Hss* 115 ka MIS 5c, Aterian with foliates, ivory objects
  - Oued Djebbana, Bir-el-Ater, Algeria, only old 14C >40ka (probably 5c), Aterian type site, shell beads same pattern as Skhul beads, inferring exchange or common ancestry
  - Haua Fteah, Libya, Aterian
- NE Africa:
  - Bir Tafawi, SW Egypt, MIS5c/a, Aterian
  - Nazlet Khater NK-1 and NK-3, 110 ka, Nubian Complex
  - Taramsa I, Upper Egypt, EMP Phase II, between 89-117 ka, Levallois and Nubian with foliates
  - Nazlet Khater NK-2, Upper Egypt, 100 ka, Nile Denticulate Mousterian
  - Aduma, Ethiopia, 80-100 ka, 'Aduma' Industry (Aduma, Nubian, and Levallois, including blades and bladelets, and micro-Aduma, micro-Levallois
- SW Asia Late Tabun C sites, circa 85-100 ka, such as
  - Qafzeh, Israel, isochron 92 ka, 18 MNI *Homo sapiens sapiens* with 'robust features', min. of 3 'burials', 1 with fallow deer antler over hands over upper chest; min. 84 ochre pieces, 6 worked, hues selected, associated with burials; marine shells not related to food acquisition, 4 perforated, several with wear traces of being strung, a few with red, yellow and black pigment stains; Q8 burial near broken triangular Levallois core incised with parallel stroke marks;
  - Naamé, Lebanon, 90 ka
  - Nahr Ibrahim, Lebanon, 80-90 ka, fallow deer skeleton 'burial' with red ochre

    - Ras-el-Kelb, Lebanon, <90 ka, red ochre pieces; flint flake with incised crisscross lines
- Late non-Tabun C sites of 'African affinity', circa 80-90 ka, such as
    - Aybut Auwal, southern Oman, 107 ka, Early Nubian Complex (possibly via Bab al-Mandeb)
    - Sinai-20 Split Rock—Lower, Eastern Sinai, 85±13 ka MIS5b, Nile Denticulate Mousterian (probably via NE Africa)
      And if they could be dated and dates fell into MIS 5b/c:
    - Gebel Urayf an Naquah, central Sinai (14 miles from Har Karkom), no date Early Nubian Complex
    - HK148b, HK72a, Har Karkom, Negev, no date, 'Aterian', hutfloor [with geometric, anthropomorphic and zoomorphic stone sculptures—*JBH*]

mtDNA Hypothesis:

(a) L3'4'6-mtDNA, homeland not identified (eliminating clock violations by cluster outliers—see details under discussion of Behar, van Oven et al article—yields) 71 to 86 ka, and with revised CHCLA x 1.2 = 85 to 103 ka, which falls squarely within MIS 5c/b.

(b) L3'4-mtDNA. Around ~77 or 103 ka (= 64±5 ka Behar, van Oven [2012]; 86±20 ka Soares, Ermini [2009], revised x1.2) —in other words, still within MIS 5c/b—L3'4'6 spun off L3'4. Later ~22 ka (Behar, van Oven [2012], with no revision) L3'4'6 spun off L6. It may be relevant to note that in current populations high frequencies of L4 and L3 occur in East Africa, while a frequency of 12%L6 occurs distinctively in Arabian Yemeni and rare in Ethiopia (Kivisild, Reidla et al 2004. To my mind this suggests by triangulation that the homeland of '3'4'6 is around the Sinai or East Africa and crossed over via the Bab to Yemen, where by either route it branched L6. This seems to support the hypothesis that L3'4'6 correlates to the MIS 5c/b mosaic of regional cultures across North Africa and the Levant.

Language Hypothesis (very speculative): L2'3'4'6 spun off L2 around ~100 ka, a haplogroup strongly associated with Niger-Congo area and speakers. If L2'3'4'6 spoke some sort of Pre-Nilo-Saharan, the remaining L3'4'6 haplogroup may have continued evolving Nilo-Saharan. In my review of mtDNA genetics articles, I could find no current population samples with L3'4'6. High frequencies of L3 and lesser of L4 occur in Kanuri and Kanembu (Western Saharan). Other Chadian groups with high frequency of L3 and lesser L4 appear to have subsequently adopted Afroasiatic Chadic. The L6 is a marker uniquely Yemen and dates to ~ 20 ka. L4 has high frequencies in East Africa (Tanzania, Ethiopia) and lesser in Yemen, Saudi Arabia and Syria.

3. MIS 5a (~85-74 ka, humid phase).

Archaeology *(Figure 2)*. Continues a mosaic of Levallois MP, Aterian, Nubian, Nile Denticulate and Tabun-C cultures ranging across North Africa and Levant, many with evidence of 'modern' symbolic behavior, such as:

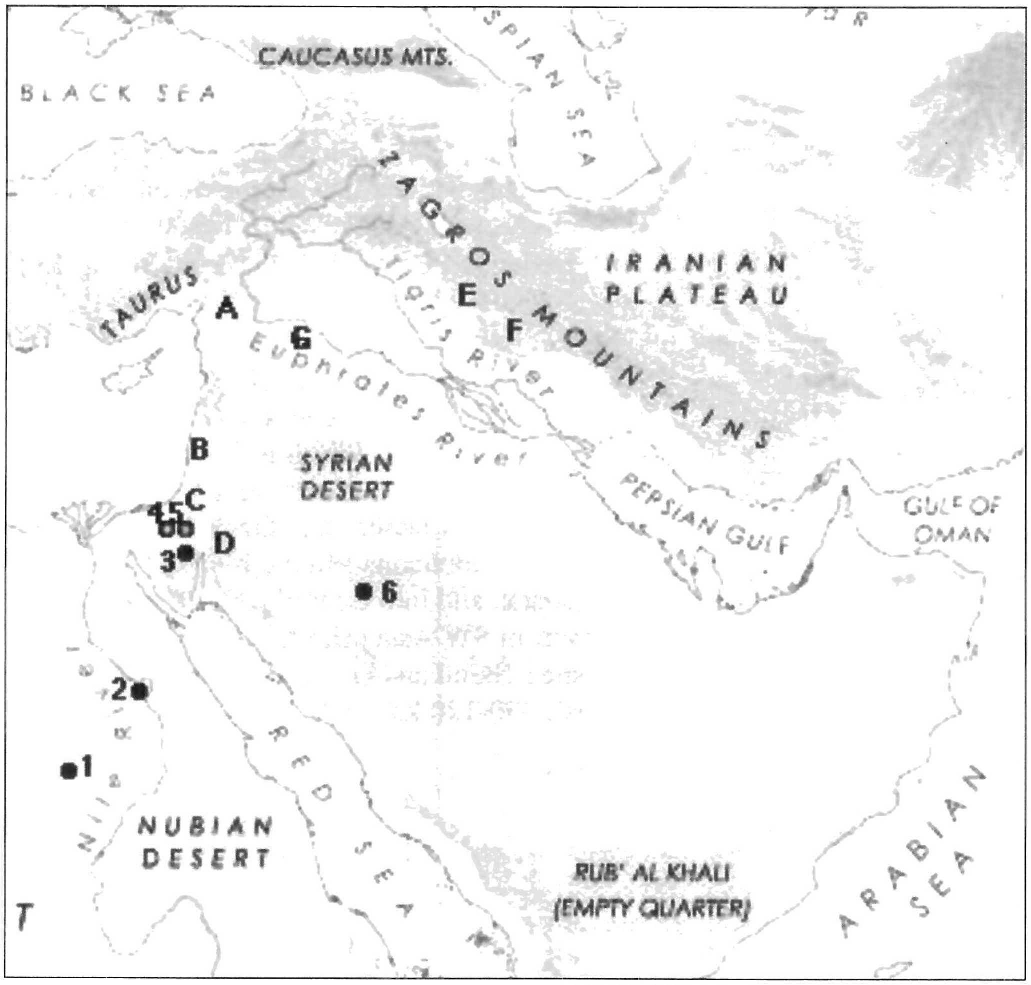
- North Africa:
  - Ifri n'Ammar, Morocco, 83 ka, Aterian; shells, ornaments
  - Dar es-Soltan I-G3, Morocco, 68-87 ka MIS 5a, Aterian with foliates
  - Grotte des Pigeons-E, Taforalt, NW Algeria, 60-85 ka, 'Aterian facies of MP', 13 marine shells, 1 red ochred, 9 perforated beads, evidence strung
  - Aïn El-Guettar, Tunisia, spring site, probably MIS 5a wet, 'Mousterian' with Aterian tanged points, closest tool analogy Tabun C and Qafzeh F; symbolic art: 60 spheroid stone heap with intricate internal features;
  - El Akarit, Tunisia, 90 ka, Aterian
  - Uan Afuda, Libya, 65-90 ka, Levallois
- NE Africa:
  - Bir Tafawi, SW Egypt MIS5a Aterian
  - Taramsa I, Upper Egypt, MMP Phase III, 76 and 79 ka loci, Levallois and Nubian; child *H. sapiens sapiens* skull, similar to Qafzeh 9 'burial'
- Central Africa:
  - Katanda, Semliki, D. R. Congo/Zaire, 80-90 ka or minimum 75 ka, MSA, barbed and unbarbed harpoon points
- SW Asia Late Tabun C sites, circa 75-85 ka, such as
  - Jebel Qattar, Jubbah paleolake, Northern Arabia, 75±5 ka
- Late non-Tabun C sites of 'African affinity', circa 75-85 ka
  - Sinai-20 Split Rock, Eastern Sinai, Upper Horizon 62±9 ka MIS4 and continuing to Lower Horizon, 85±13 ka MIS 5b, Nile Denticulate Mousterian
    Possibly, if they were dated and dates fall into MIS 5a rather than MIS 5b/c:
  - Gebel Urayf an Naquah, central Sinai (14 miles from Har Karkom), no date Early Nubian Complex
  - HK148b, HK72a, Har Karkom, Negev, no date, 'Aterian', hutfloor [with geometric, anthropomorphic and zoomorphic stone sculptures—*JBH*]

Otherwise MIS 5a in SW Asia evidences only Late Tabun-D and Early Tabun-B industry Neanderthal sites, some with symbolic behavior, such as

- Tabun Cave B-Unit1, 90+30/-16 ka, Neanderthal remains, Tabun-B type site

- Nahal Aqev (D35), Negev, Layer D, 74/85 ka, Tabun-D
- Boker Tachtit, Negev, Level 1, 80±10 ka, Tabun-D
- Umm el Tiel IV, El Kowm, Syria, 76±16 ka, Tabun-D
- Douara Cave, Syria, 75 ka, manuported baked barite nodules with natural geometric patterns (concentric circles with double stars), Tabun-D
- Dederiyeh Cave L8-9, Syria, 60-90 ka; 15 MNI Neanderthal mortuary cache, Tabun-B
- Tor Sabiha, Wadi Hisma, Jordan, 62-70 ka, Tabun-B
- Kebara Cave-FXII, Israel, 60 ka; Neanderthal mortuary cache; 1 engraved bone with stroke and chevron marks, Tabun-B

In SW Asia, the Neanderthal range is generally considered to cover coastal Levant and the Syrian Desert, and the entire region north of it from Anatolia to Zagros Mountains and the Iranian Plateau to Afghanistan and Pakistan and into Central Asia. There are no fossil *Homo sapiens sapiens* in SW Asia prior to Ksar Akil ~37 ka except the Tabun-C industry sites, Skhul and Qafzeh, which have '*sapiens sapiens* with robust features', ~90-120 ka.


CAUCASUS MTS.
BLACK SEA
CASPIAN SEA
ZAGROS MOUNTAINS
IRANIAN PLATEAU
TAURUS
A
G
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Tigris River
Euphrates River
B
SYRIAN DESERT
C
4 5
3
D
6
PERSIAN GULF
GULF OF OMAN
2
1
Nile
NUBIAN DESERT
RED SEA
RUB' AL KHALI (EMPTY QUARTER)
ARABIAN SEA
T

Figure 2. MIS 5a sites in NE Africa and SW Asia sites, dated and associated to species by fossil or tool industry. *Homo sapiens sapiens* sites: 1, Bir Tarfawi (Aterian). 2, Taramsa I (Levallois and Nubian, *Hss*). 3, Sinai-20 Split Rock (Nile Denticulate). 4, Gebel Urayf an Naquah (Nubian Complex, no date). 5, Har Karkom (Aterian and Levallois, no date). 6, Jebel Qattar (Tabun-C). *Neanderthal* sites (with Tabun-B and Tabun-D industry): A, Dederiyeh. B, Tabun and Kebara. C, Boker Tachtit. D, Tor Sabiha. E, Shanidar. F, Bisitun. G, Umm el Tiel.

mtDNA Hypothesis:

(a) L3. If similarly to our method in the case of MIS 5c/b, if we take L3 and L4 as a cluster and eliminate its outliers (79 and 65 ka) the range for that cluster is only 65 and 67 ka, average 66 ka; or if we average all four dates, 71 ka, thus suggesting a range 66 to 71 ka, and with revised CHCLA x 1.2 = 79 to 85 ka, which falls squarely within MIS 5a.

L3'4—with possible homeland around the Sinai, Nile or East Africa—spun off L4 around ~95 ka (=79±7 ka Behar, van Oven [2012]—Soares gives no date for this—revised x1.2) and L3 around ~78 or ~80 ka (=65±5 ka Soares, Alshamali [2012] and 67±4 ka Behar, van Oven [2012] revised x1.2).

(b) Based on frequencies of its oldest subclades in current populations (L3h, L3a, L3i'x, Soares, Alshamali et al (2012) infer an L3 homeland in the Horn of Africa / East Africa. Subsequently L3 subclades spread across the tropical rainforest into Central and West Africa and up into North Africa and—they suggest—across the Bab into Arabia and beyond. As noted earlier, they offer a caveat that the homeland of L3 might be North Africa "with its rapid radiation corresponding to an early range expansion into Eastern Africa" (924). They reject this possibility on the basis that a 65 ka expansion date is a time of severe drought, which would have blocked a north to south dispersal (presumably along the Nile or Red Sea). On the contrary, as I've argued, a revised CHCLA divergence date puts L3 at ~80 ka, that is, the MIS5a humid period. Thus their objection falls; the most likely hypothesis now is that L3 and L4 branch off of a Northeast African L3'4 and their subclades radiate south into East Africa, and L3 then spreads across tropical Africa and across North Africa while L3 subclades N and M disperse into SW Asia and beyond.

Language Hypothesis (very speculative): As for L3, high frequencies occur (in rank order of L3 frequency from high to low) in Tanzania, Niger-Congo, Yemen, Morocco, Tunisia, Libya, Tigrais, Egypt and Iraq [language in brackets]. For example:

- Sukuma, TZ [Niger-Congo] 72%L3
- Masa, Chad, Cameroon [Central Chadic<Afroasiatic] 61%L3
- West Africa [Mande and Mel<Niger-Congo] 32%L3
- Buduma, Chad, Cameroon, Nigeria [Central Chadic<Afroasiatic] 30%L3
- Burunge. TZ [Cushitic] 29%L3
- Turu, TZ [Niger-Congo] 29%L3
- Datoga [South Nilotic-Eastern Sudanic] 27%L3
- Yemeni [Arab] 24%L3
- Morocco [Arab]16%L3
- Tunisia [Berber] 6-18% varying by tribe; Libya Tuareg 12%L3
- Tigrais [Tigrinya-Semitic] 12%L3
- Egypt [Arab] 9%L3

L3 seems to be most distinctively associated with an early form of the Afroasiatic language family.

With the caveat that absence of evidence is not evidence of absence, I find only one African-affinity tool assemblage in SW Asia during MIS 5a (~74-85 ka), Sinai-20 Split Rock, Eastern Sinai, Nile Denticulate Mousterian (AKA 'Local Nile K-group'). To my knowledge there are no dated African-affinity sites in SW Asia in the subsequent MIS 4 (~59-74 ka), excepting at this same Split Rock Site.

> 'Nile-K is comparable to the Initial EUP at Boker Tachtit, Negev', 47±9 kya (Marks 1981; Schwarcz et al 1979)

During MIS 5a I find only one Late Tabun-C site, Jebel Qattar, Jubbah paleolake, Northern Arabia, 75±5 ka. Apparently, the Tabun-C industry faded away or its peoples were displaced, possibly from the Levant toward the more marginal Northern Arabia or Sinai-Negev paleolakes and their watersheds. There is strong evidence for Tabun-B Neanderthals over much of the Levant; I list a few of many such sites above. Opposite to a popular view, it appears that in SW Asia during MIS 5a and MIS 4 Neanderthals actually replaced or at least displaced *Homo sapiens sapiens*.

Alternative Scenarios for L3 Out-of-Africa.

A. L3 stayed in Africa but branched N and M out via the Sinai. If MIS 5a in SW Asia was a period of widespread cultural and political turmoil under the influx of Neanderthals and the fragmentation and disappearance of the Tabun-C dominance this may have provided an opportunity for M and N to diffuse over SW Asia. That so far the only evidence for a tool industry out-of-Africa in MIS 5a is the Nile Denticulate at Sinai-20 Split Rock this is archaeological support for the Sinai route. There is as yet no archaeological evidence for a Bab crossing.

   If they could be dated and dates fell into MIS 5a these two sites could be added to the African affinity list:

      Gebel Urayf an Naquah, central Sinai, Early Nubian Complex
      Har Karkom, 'Aterian'

   Each of these is consistent with a Sinai crossing rather than via the Bab.

   From the Sinai crossing, N dispersed both northward into Central Asia, East Asia, and Europe but also into South Asia, SE Asia and Australia; and M dispersed into South Asia and East and SE Asia, but left no trace in SW Asia.

B. L3 stayed in Africa but branched N and M out via a Coastal Crossing. If in the future African-affinity sites are found in southern Arabia dating to MIS 5a, L3 and or M and N crossing the Bab-al-Mandeb or even clockwise around the end of the Red Sea might be supported.

C. L3 indigenous in SW Asia. Root-L3 emerged in SW Asia off of L'3'4 in SW Asia, radiated into NE and then E Africa, but left no ancient genetic trace in SW Asia. If so, Sinai-20 Split Rock could be the remains of a root-L3 people, as could Jebel Qattar, northern Arabia.

D. The current mtDNA Phylotree has somehow misassigned M and N to L3, when they actually are branches of L3'4 already in SW Asia MIS 5b (~93-85 ka). In this case, M and N would likely be associated with Tabun C sites circa

75-85 ka, such as Qafzeh (isochron 92 ka), Naamé (90 ka), Nahr Ibrahim (80-90 ka), Ras-el-Kalb (<90 ka), and Jebel Qattar, N Arabia (75±5 ka).

Under the two scenarios C and D in which L3 is already-in-SW-Asia, M-mtDNA likely diverged during a Zagros Crossing into South Asia. This would best explain why M-mtDNA appears to have left no trace in SW Asia and its homeland appears to be South or SE Asia. Scenarios A and B cannot explain no M in SW Asia and only opine that it disappeared. More relevant archaeological sites, mtDNA population samples and the discovery of ancient DNA in SW Asia and South Asia are needed to determine which scenario appears most on target.

4. MIS 4 (~74-59 ka).

Whichever of the preceding alternative scenarios, N-mtDNA emerged around 74 ka (62 x 1.2), followed by M 73 ka (60.5 x 1.2), at the MIS 5a to MIS 4 transition, which was the start of a long period of aridity. If these dates are correct, *Homo sapiens sapiens* migration must have paused for about 5,000 years in SW Asia between L3 ~79 ka and M/N ~74 ka, presumably due to the geographic bottlenecks at the Transcaucasus and Zagros Crossing to India, both areas already occupied by Neanderthals, as well as the displacements caused by the influx of Neanderthals into SW Asia at the time. Probably a compounding stressor was the ~74 ka Toba volcanic supereruption in Sumatra; indeed that may have been a factor in the arrival of the Tabun-B industry Neanderthals as well as the branching of M and N from L3.

> There is a recent fashion to argue that there were no *Hss* in southern Asia prior to the Toba supereruption ~74 ka. Current debate may refer to the well-excavated site, Jwalapuram, Kurnool District, Andhra Pradesh. This area has archaeological layers with similar Middle Paleolithic tool assemblages at Locality 3 (OSL) before Toba, 77±6 ka and after the Toba ash layer, 74±7 ka (Petraglia, Korisettar et al 2007; Haslam, Clarkson et al 2012). On this basis authors argue that Toba ashfall did disrupt cultural continuity, though authors acknowledge there is no fossil or other evidence to confirm the tools were made by *Hss*.

As noted above, under scenarios C and D in which L3 is already-in-SW-Asia, M-mtDNA likely diverged during a Zagros Crossing into South Asia. Whichever scenario genetics counts the homeland of M as South Asia or SE Asia. My review of global haplogroup occurrences indicates that M clades most often correlate to the Eurasiatic language family, with one anomaly being D-mtDNA, which implies that ancestors of the Han Chinese dropped their Eurasiatic language and adopted one from the Dené-Caucasian family.

While in SW Asia N-mtDNA branched off R-mtDNA around 69-73 ka (57-60 x 1.23) with clades that eventually migrated all the way to SE Asia/Sahul by a southern route *sensu lato* (and if the date is right, post-Toba) and later R→U clades, some remaining in SW Asia and others spreading to North Africa, South Asia and Europe.

N in SW Asia may have first diffused northward (as Hublin and Klein 2011 based on paleontology and Scally and Durbin 2011 based on nuclear DNA surmise) and subsequently both N and R diffused into South Asia and on to SE Asia and Sunda/Sahul—the so-called 'Southern Route'. Or N may have split into subclades at the Persian Gulf Oasis, some clades back-migrating to the northwest into the Transcaucasus, Central and East Asia, while other clades diffused eastward through South Asia. The north diffusing N-mtDNA appears to most often associate to the Dené-Caucasian language family. Southern route R-mtDNA most correlates to Austric (R21, R9→F) and Pama-Nyungan (R→P) language families. Exceptional is an N lineage diffusing southward, presumably with R, eventually to Australia (N→O) already having or adopting Pama-Nyungan; it may also be that N and R migrated together in peoples with dual moiety organization, which is not infrequent among 'Indo-Pacific' tribes.

R-mtDNA U-subclades remaining in SW Asia appear to be associated with a precursor of Semitic, Dravidian, Elamitic and Kartvelian language families. The fact that R-mtDNA correlates to Indo-Pacific languages in South and SE Asia and Sunda/Sahul but also languages like Semitic and Kartvelian may present a problem for linguists, which I leave to linguists to sort out. I do note that a deep reconstruction of global mythology Yuri Berezkin (2010) locates the 'rainbow snake' motif in Europe as well as tropical Africa and widespread across Indo-Pacific Asia.

- Berezkin Y. 2010. From Africa and back: some areal patterns of mythological motifs. *Mother Tongue* XV: 1-67.

Looking over Berezkin's list of European and three Central Asian populations having the rainbow snake motif, I suggest that they seem to correlate to R-mtDNA offshoots R0/HV (precursor to Sumerian, Basque?) and U-mtDNA groups (U4'9 precursor to Kartvelian?).

Table 1 summarizes the preceding account of the four epochs of out-of-Africa. The SW Asia differentiation of M, N and R as well as expansion of L3 subclades in Africa appears to have been complete by around 70,000 years ago. Archaeological sites and dates are from recent field reports. TMRCAs from these reports are multiplied x 1.2 in accord with new revised earlier dating of chimpanzee/human split. The column with mtDNA haplogroup correlations is based on most recent archaeogenetic studies that give TMRCAs. The correlation of mtDNA haplogroups to archaeological sites are my predictions based on currently available studies; fossil DNA would be needed for any definitive proof.

For my highly speculative predictions for ancestral language macrofamilies, I have drawn on genetic studies of present day population samples and the present language associated with that population. I leave it to linguists who reconstruct proto-languages and the sapiens sapiens language phylotree to rule in or out any of these speculations. I emphasize that as a non-linguist I have prefixed all these hypothetical ancestral languages with 'Pre', e.g., 'Pre-Nilo-Saharan'. This is to affirm that I do not take the language spoken at a given time period to be a reconstructed proto-language. I am only suggesting that with respect to a population at time 'x' who likely had the mtDNA haplogroup to which I correlate it, and who undoubtedly had a language, when we look for currant populations bearing this haplogroup (in high or unique frequency compared to other groups) the language they currently speak, subtracting known recent invasive or adopted languages, likely has some probability of retaining features of the language of their paleolithic ancestors. In my review, as might be expected, the genetic and language correlations seem to me much stronger for the later language families in MIS 4.

With respect to the early dating of language, in addition to extensive evidence of symbolic behavior in the archaeological record for archaic *Homo sapiens*, Neanderthals and *Homo sapiens sapiens*, I find two recent paleolinguistic studies especially relevant. Atkinson (2010) reviews glottochronology methods and observes that the standard method for glottochronology developed by Swadesh places an upper limit on language classification at around 8,000 years and a modified method (Pagel, Atkinson and Meade 2007) may extend the limit to 50,000 years or so.

- Atkinson QD. 2010. The prospects for tracing deep language ancestry. Interdisciplinary views on Molecular Anthropology in the Genomic Era. *Journal of Anthropological Sciences* 88: 231-233.

If so, such methods appear to be incapable of dealing with predictions for out-of-Africa languages. A more recent study at least confirms that '*proto-Sapiens sapiens*' language arose in tandem with the emergence of the species. Based on phonemic diversity Perreault and Mathew (2012) calculate that the language of *sapiens sapiens* emerged between 163 and 242 ka, a date range corresponding to the earliest fossil attributed to our species, Omo 195 ka.

- Perreault C, Mathew S. 2012. Dating the Origin of Language Using Phonemic Diversity. *PLoS ONE* 7(4): e35289.

Since language reconstruction methods to date appear to me—admittedly a non-linguist—to not be able to predict the emergence dates of very ancient language families, I have thrown my wild speculations into the ring.

Table 1: Out-of-Africa-Before-Out-of-Africa: Hypothetical Correlations

Date (ka)	**Key Archaeological Sites**	**mtDNA Hg** (TMRCAs x1.2)	**Language Family** (speculative)
MIS 5e ~130-117 MIS 5d ~115-106	Maghreb, Levallois Mousterian, Aterian Bir Tarfawi, Aterian Early Nubian Complex Abdur, MSA handaxes Skhul, Tabun-C Jebel Faya, MP handaxes [Zhirendong, S. China, *Hss* min. 106±7 ka]	L2'3'4'6 ~133 ka	Pre-Nilo-Saharan? [preceded by L2-6→L5 = split of Hadza / Sandawe and high% L5 in Mbuti (Central Sudanic)]
		L0a'b'f ~120 ka	Pre-Nilo-Saharan? [high% in Datoga Eastern Sudanic]
MIS 5c ~106-93 MIS 5b ~93-85	Contrebandiers, Aterian Bir Tarfawi, Aterian Nazlet Khater, Nubian Complex Qafzeh, Tabun-C Sinai Split Rock-L, Denticulate Aybut Auwal, Nubian Complex	L3'4'6 ~103-85 ka L3'4 ~103or77 ka	Continues Nilo-Saharan? [high% L3 Saharan] [L6 unique Yemen] [L4 Ethiopia, Saudi Arabia, Syria, Yemen, Tanzania area] [L2 emergence ~100 ka = Niger-Congo?]
MIS 5a ~85-74	Ifri n'Ammar, Aterian Pigeons, Taforalt, Aterian El-Guettar, 'Final Mousterian' Taramsa I-Phase III, Levallois and Nubian Bir Tarfawi, Aterian Jebel Qattar, Tabun-C Sinai Split Rock-U, Denticulate	L3 ~79 ka	Pre-Afroasiatic? [L3 high% Tanzania, Niger-Congo, Yemen, Morocco, Tunisia, Libya, Tigrais, Egypt, Iraq]
MIS 4 ~74-59	[Callao, SE Asia, *Hss*, min. 67±7 ka]	N ~74 ka M ~73 ka N→R ~69-73 ka	N=Dené-Caucasian M=Eurasiatic Southern-R = Austric, Pama-Nyungan Northern-R/U = Semitic, Dravidian, Kartvelian

Conclusion

In short, new archaeogenetic and archeological studies imply that the mtDNA biological clock requires rescaling and may have serious validity problems. Re-orienting the mtDNA Phylotree to Africa rather than Cambridge, UK has resulted in clock violations suggesting parts of the phylotree itself may need to be reorganized.

New paleontology findings reveal a mosaic spread of mid-Middle Paleolithic *Homo sapiens sapiens* 'with robust features' from the North African Maghreb to the Levant. Skhul, Qafzeh and other Tabun-C industry sites are not a 'genetic dead end' but the eastern wing of this mosaic. New archaeological discoveries confirm this mosaic of cultures and indicate that the Tabun-C culture appears to have spread over northern SW Asia and its territorial boundary must now be factored into any out-of-Africa scenario.

My analysis shows that that the *Homo sapiens sapiens* dispersal of 'modern' symbolic behavior occurs by MIS 5e ~120,000 years ago, 40,000 years before the emergence of L3-mtDNA. This analysis confirms the need to decouple the spread of symbolic behavior and the spread of L3, M and N mtDNA in any reconstructions of out-of-Africa prehistory.

Synthesizing and correlating the latest genetic and archaeological discoveries, including rescaling the Soares mtDNA mutation clock to the revised 8 mya chimpanzee/human split date—assuming the van Oven Phylotree Build for the L3 branch is not misaligned—I have inferred a four-stage model for middle Middle Paleolithic cultural prehistory of *Homo sapiens sapiens* across North Africa and SW Asia.

By around 120,000 years ago (MIS 5e/d), early *Homo sapiens sapiens* spread from the Maghreb to the Levant. Whether beyond into South or SE Asia is an open question. Tool industries associated with this mosaic include Levallois Mousterian, Aterian, Early Nubian Complex, MP with handaxes and Tabun-C. Based on mtDNA TMRCAs, this dispersion is probably associated with L2'3'4'6 and also L0a'b'f. Based on current genetics, languages associated with these haplogroups might have been some predecessor form of Sudanic and Cushitic.

By 100,000 years ago (MIS 5c/b) these Maghreb-Levantine cultures continued development of the same tool industries, with addition of Nile Denticulate. Evidence of 'modern' symbolic behavior is even more extensive. The Tabun-C culture has spread from coastal sites over most of northern SW Asia. According to TMRCA dates they are probably now associated with L3'4'6 and L3'4 mtDNA. Tentatively, I predict that they continued some form of Sudanic-Cushitic language.

By 80,000 years ago (MIS 5a) the mosaic of early *Homo sapiens sapiens* cultures continues across North Africa, but, tentatively, the archaeology indicates that the Tabun-C culture was in decline and displaced by the arrival of Neanderthals. Only one Tabun-C site is known for this time period, the recently discovered Jebel Qattar in northern Arabia. Only one African-affinity site in SW Asia is known, the Split Rock Nile Denticulate in the eastern Sinai. During this time from L3'4 L3 emerged in a homeland that might be East Africa, although a North Africa or even Levantine homeland has not been ruled out. L3 seems to be most distinctively associated with an early form of the Afroasiatic language family, perhaps Berber-like with admixture of Sudanic and Cushitic features. How to name this language entity is an open question.

After this there seems to have been a pause of L3 in SW Asia for about 5,000 years during which emerged N, M and R, around 69-74 ka at the MIS 5a to MIS 4 transition, the start of a long period of aridity stress. The pause was likely due to the geographic bottlenecks at the Transcaucasus and Zagros Crossing to India, both areas already occupied by Neanderthals, and possibly the compounding stressor of the Toba volcanic supereruption ~74 ka. N moving northward out of SW Asia into Eurasia may correlate to Dené-Caucasian languages and M in India and beyond, Eurasiatic languages. R clades migrated all the way to SE Asia/Sahul by a southern route *sensu lato* and did so along with some N clades, and this Southern R correlates to Austric and Pama-Nyungan languages. Later in SW Asia R→U clades, some remaining in SW Asia and others spreading to North Africa, South Asia and Europe and correlating to early forms of Semitic, Dravidian and Kartvelian.

Given the rescaling of L3 dates the notion that there was some sort of 'fast track' to Australia is no longer tenable; it appears to have been a slow walk with many pauses at various geographic bottlenecks, along with species admixtures along the way. Given the mosaic of early *Homo sapiens sapiens* cultures across North Africa and SW Asia the notion that one can propose a single or even a couple arrows from East Africa to Australia is a definite oversimplification if not a falsifiable illusion. What all this has to say about reconstructions of language superfamilies, such as Nostratic, Borean and 'southern route Indo-Pacific' languages, I leave to linguists.

Limitations

The focus of this review has been mtDNA; I have not reviewed Y-DNA studies. Whether proposed hypotheses are or are not supported by recent Y-DNA I leave to others more familiar with this side of archaeogenetic research. I only mention in passing that Cruciani, Trombetta et al (2011) proposes a major revision and age increase for the root for the Y-phylotree.

- Cruciani F, Trombetta B, Massaia A, Destro-Bisol G, Sellitto D, Scozzari R. 2011. A revised root for the human Y chromosomal phylogenetic tree: the origin of patrilineal diversity in Africa. The *American Journal of Human Genetics* 88: 814–818.

They report new DNA findings that require identify a new root 'Adam' (142 ka), which branches into A1b and A1a-T (108 ka) which gives rise to A1a and A2-T (105 ka), then A2-T yields A2, A3 and BT (75 ka), and the latter yields B and CT (39 ka) with the out of Africa lineages C and R. They conclude that "contrary to previous phylogeny-based conclusions, the deepest clades of the revised MSY phylogeny are currently found in central and northwest Africa. MSY lineages from these regions coalesce at an older time (142 ka) than do those from east and south Africa (105 ka), opening new perspectives concerning early modern human evolution" (817). I note that their proposed TMRCA dates for 'Adam' (142 ka) and for the next branch A1a-T (105 ka) place the root in MIS 5e or earlier and the next branch in MIS 5c, which appears to be in agreement with my hypotheses for the stages of out-of-Africa from NW Africa to the Levant.

Given the 2012 chaos of out-of-Africa mtDNA archaeogenetics, which raises doubts about the mtDNA mutation clock and even the phylotree branches around L3, any out-of-Africa hypotheses must be considered highly tentative. My guess is that it will be a few years before the field reconsolidates itself. We must await new genetic analysis methods, rescaling of prior timelines and new discoveries. I look forward to readers' thoughts and comments on my suggested new model for out-of-Africa before out-of-Africa.

Michael Witzel zu Ehre

The following is a translation of Alfredo Trombetti's paper "Puluga – Il nome più diffuso della divinità", published in Bologna by Stabilimenti Poligrafici Riuniti in 1921. Most of this content is repeated in his 1927 paper "Puluga – Origine e diffusione del nome", hence I have merely alluded to new points in this paper through footnotes. Trombetti adds more content on his theory expounded in *Glottologia* that vowel alternation, notably between *i* and *u,* may reflect semantic polarities, although this idea is already present in this paper, where Trombetti notes that "As we shall see, the forms with front vowels indicate more particularly 'lightning' while those with back vowels, 'thunder'." Assirelli notes that the likely starting point for this etymology was Schleicher's citing of "Bulgu" in *Afrikanische Petrefakten* and Trombetti had already spotted the African-Andamanese link in the study by his disciple Ricardo Gatti, in 1906. I would nevertheless like to point out that Trombetti did not simply pull his etymology "out of thin air" but traced regular sound correspondences between the Andamanese languages and other language groups (cf. *Glottologia*, p. 540).

Puluga
The Most Widespread Name of the Divinity

Alfredo Trombetti[1]

Primus in orbe deos fecit timor

The most widespread name of the divinity is certainly the one which in the Andaman Islands is represented by the form in Bea and Bale *Puluga.* I concern myself with this in the introductions which I wrote for the first and second volume of "Studi sul gruppo linguistico Andamanese-Papua-Australiano" [Studies on the Andamanese-Papuan-Australian linguistic group] by R. Gatti and subsequently in "Comparazioni Lessicali" [Lexical comparisons], under the item *pulu-g, bulu-g* (pp. 363ff.). I believe that it is appropriate to set forth the facts again here, adding what is necessary to understand the phonetic and semantic differences which are observed in the various forms assumed by that extremely ancient name of the divinity.

In addition to the Andaman Islands, the name occurs in the territory of Eurasia from the Baltic to Kamchatka, in Africa, especially West Africa, and lastly in New Guinea, Australia and Tasmania. Further research may add new connections and in particular, the presence of the name in Kamchatka makes it appear likely that it will also be found in the Americas, all the more so since the conception of the divinity as the personification of thunder or in general, of the frightening forces of nature, appears to be very widespread.

I order the principal forms, taking as a basis the vowel of the second syllable, which predominantly appears to be the location of the accent (excluding the fourth series, in which the middle vowel has disappeared).

The first group includes the Andamanese languages, the second, Khasi and the languages of Indochina, the third, the languages of New Guinea, Australia and Tasmania, the fourth those of Africa and the fifth, the remaining ones.

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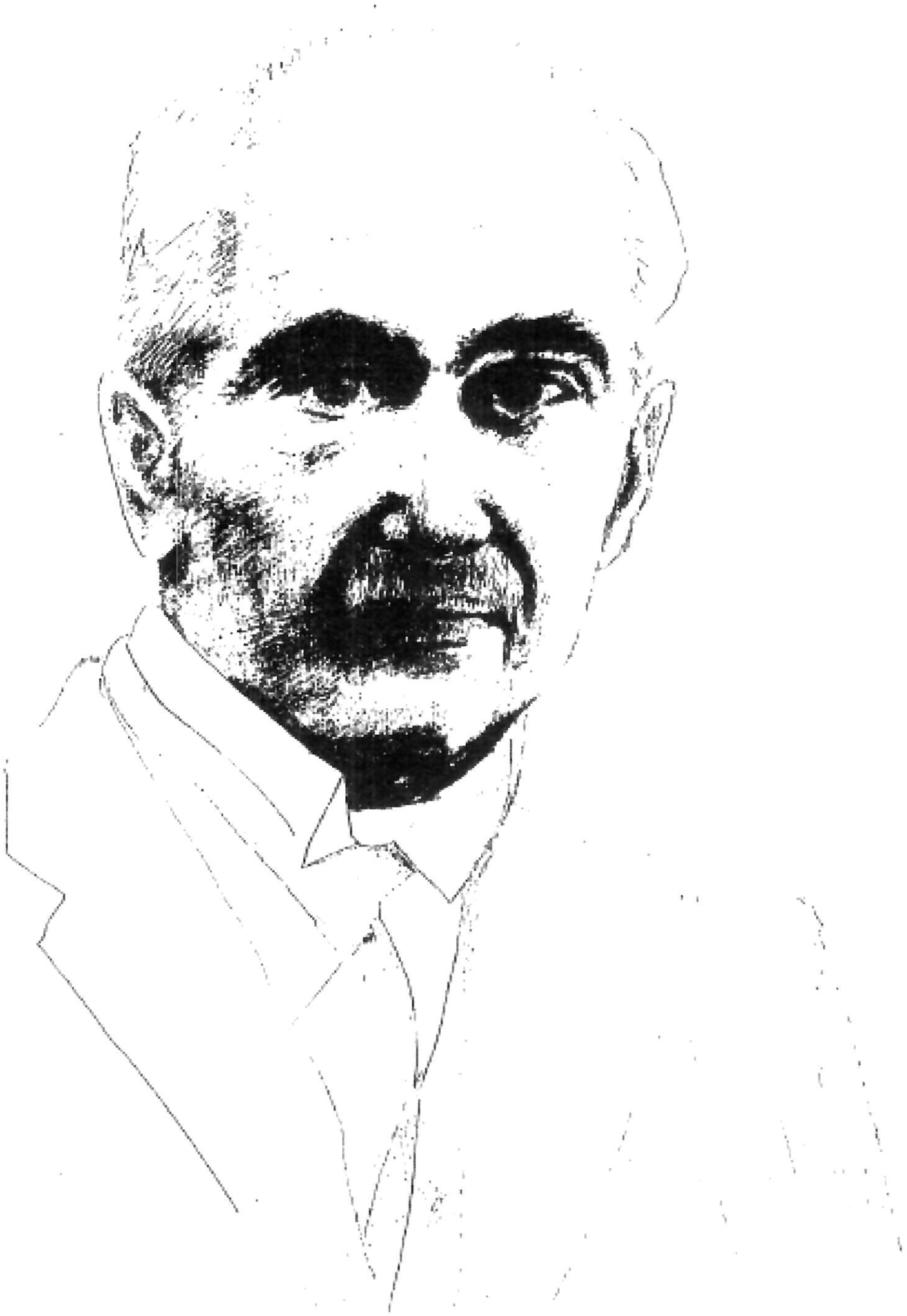
[1] Note from the full academic, Alfredo Trombetti, submitted on February 26, 1921.



Alfredo Trombetti | Drawn by Václav Blažek

Puluga Bea and Bale *Uluge* Oenge *Öluga* Oenge	*Biliku* Jeru *Bilik* Puchikwar *Bilek* Chariar	*Bilak* Juwoi and Kol	*Bilke* Kede
	Blei, Brei Khasi *Plē* Semang *Phrī* Ahom	*Blāi, Prāi* Khasi *Pārā, Prā* Palaung *Phrā* Khamti	
	Berik Tasmanian	*Burak* Tasmanian *Palagu* Keapara	*Pirku-ir* Walsh River *Pargi-gi* Australia (89 - E of Nicholson River & between that river and the coast)
Burukú Togo[2] *Bluku* Gold Coast *Blugwe* Sobo			*Bulgu* Pul and Galla
Biluka-i Camchadal		*Buraχa-n* Uighur (*Burku-ng* Buryat)	*Parjá-nya-* Sanskrit *Perkú-na-* Lithuanian *Perke-le-* Finnish

As a rule, the initial consonant is *b*. In Oenge, it has disappeared, probably having mutated to a *w*, cf. *unya-gile* 'man' = Australian (95 - Leichardt River) *bun-gil* 'blackfellow'. The *p* of Bea and Bale corresponds to *b* in other dialects, including in other cases and moreover, the tendency to change the initial voiced consonants into unvoiced ones is very common in certain linguistic groups. In Semitic, there is an alternation between *p-* and *b-*, corresponding to the alternation in Indo-European between *p-* and *bh-*, as was demonstrated by H. Moeller.

In Ugrofinnic, the initial plosives are generally unvoiced, hence Finnish *Perke-le-* 'devil' (but Lappish *Bärga-la-k* idem.).

The original middle consonant is *l*, whence in some cases *r*. Ahom *Phrī* 'devil' corresponds to Khamti *Phī*, Tairong *Fī*, i.e. the liquid has disappeared. It appears that we cannot separate *Phī* from Tamil *Pēi* 'demon' and *Pei* 'devil' in Kakadi, so that the word would also be represented in the Dravidian group.

The final consonant is *k*, which easily becomes the voiced consonant *g*. In the second group, it has disappeared or has changed into the consonant *i*. Cf. Malacca Peninsula *pelek* and *pele* or *pli*, Bahnar *plei* and *ple* 'fruit'; Kafa *tako*, Galla *d.aqá* and *dagá*; Afar-Saho *d.ay* and *d.ā* 'stone, rock', similarly Turkish *tag* or *taγ*; Osmanli *da'* and *dā* 'mountain'; Saxon *dag*, English *day* 'day'.

With regard to vocalism, it is not possible to discuss this extensively in this brief note. The *u* in Bea and Bale often corresponds to *i* in the other dialects, and the change may have taken place via *ö* (cf. Oenge). It does not appear, however, the variation in vocalism is always a merely phonetic phenomenon in this case: in part it is undoubtedly of a morphological-semantic character. It should be noted that in the Siamese group, *Phrā* means 'god' and *Phrī* 'devil, demon'. It is also useful to recall that *Puluga* is an essentially male divinity, while in *Biliku*, female characteristics appear (as do animal-like ones, since it is conceived as the figure of a spider, suggested, as I suppose, by the form of lightning).

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[2] In the 1927 paper, Trombetti identifies this language as Lefana.

As we shall see, the forms with front vowels indicate more particularly 'lightning' while those with back vowels, 'thunder'.

The fact that *Puluga* is a divinity of uranic character has been well demonstrated by our own Pettazzoni. Substantially, he is the god of thunder. The same may be said for all of the divinities associated with *Puluga* by their very name, insofar as I can see from the characteristics known to me. In this way, Semang *Ple* is conceived in close connection with *Kari* or *Kare*, i.e. the god of thunder.

In Tasmania as well, the malevolent higher being was related to weather phenomena, as is rightly maintained by Pettazzoni. With regard to the Billukai of Kamchatka, I have found this item of information in E. Tylor, 'Primitive Culture', 1918, II, 204: "In the religion of the Kamchadals, *Billukai*, the hem of whose garment is the rainbow, dwells in the clouds with many spirits and sends thunder and lightning and rain". Just like *Puluga*. Lastly, it is known that the Indian *Parjánya* is the god of rain and lightning and *Perkúna-* of the Lithuanians is the god of thunder[3]. And it is curious to observe that in Lithuanian, it is said *"Perkúnija griáuja"* 'Perkuna thunders', exactly like in Grand Andamanese, they say *Puluga-la gaurawa-ke* 'Puluga thunders'.[4]

All of this is abundantly demonstrated from the following comparisons. I must nevertheless state a notion of semantics beforehand. In the cited series of *Comparazioni lessicali* [Lexical comparisons], those with the meaning of 'to rumble, to thunder' were not originally distinguished from the other with the sense of 'to shine, flash' (cf. pp. 401ff.). The words which indicate thunder directly may indirectly have indicated the concomitant phenomenon of light, i.e. a flash. In this way, we may explain, for example, how the Semitic *baraq-* 'to flash' corresponds to Latin *frag-or* 'to crash' (Old Icelandic *brak-* 'to creak'), Andamanese Kol *o-parak* 'to thunder', etc.[5]

For the forms in the first column, cf. firstly Oenge *öluge* on which Portman and Temple agree (if, as Brown claims, in Little Andaman, they say *gi dodo iu* 'thunder', cf. Zulu *dudu-ma* 'to thunder', this does not mean anything). Tibetan has *a-brug* 'thunder' = Togo *Burukú*, Australia (85 – NW Bend of the Murray River) *poorok* 'thunder', Tupi (Brazil) *poroko* idem.; a dialect of Tibetan has *blug* 'thunder' = Gold Coast *Bluku*, Great Arawak (Brazil) *-péluka* beside *–péruka* and *píroka* 'flash', Wa (Middle Salween[6]) *plok-blak* 'flash' cf. also Sanskrit *sphūrg-* from *s-purug-* 'to rumble, to thunder'.

For the forms of the second column cf. Bilin *bilic'* from **bilik* 'to thunder', Coptic (Bohairic) *brēg'*, (Sahidic) *e-brec'e* 'flash', Old High German *blik* idem., Khmer *bhlek*, Angkú *palek* 'flash'. We do not find any forms here which mean thunder.[7]

For the forms of the third column, cf. principally Semitic *baraq* 'to flash', Aramaic *bëraq* 'flash', Andamanese Kol *o-parak-* 'to thunder', Australian (86 – Ned's Corner) *poorache* 'thunder', Wa *plak* 'flash'; then Uighur *buraχa-n* 'storm' (= Taino of the Antilles *furaka-ne* and *huraka-ne*, whence our word 'hurricane'), a form which recalls Papuan

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[3] In *Comparazioni Lessicali*, 363-4, Trombetti also cites the Old Icelandic deities *Fjörgyn/Fjörgynn*.

[4] In his 1927 paper, Trombetti adds "The Indian *Bhrgavas* are, as is known, mythical beings intimately connected with fire, found by them and given to men. In the same way, *Puluga* is always named in the Andamanese legend on the first introduction of fire; cf. Portman, Notes on the languages of the South Andaman group of tribes, 97-105.

[5] In his 1927 paper, Trombetti adds Sumerian *bulug* 'to split, crack'.

[6] Burma

[7] In his 1927 paper, Trombetti adds more Andamanese forms: Jeru *Biliku*, Puchikwar *Bilik*, Chariar *Bilek*, Kede *Bilke*, Sumerian *pirig* 'to shine', Greek φλεγ- 'to burn, flare up'

Binandele *poroga* 'cloud'. Cf. also Latin *frag-or*, Greek *σφαραγ-* and Lithuanian *sprag-* 'to thunder'.[8]

For the forms of the fourth column, cf. principally Prussian *perku-ni* 'thunder' and Mordvin *pirge-ne* idem[9], then Assyrian *birqu* 'flash' (these forms with *I* on the first syllable agree with Walsh River *Pirku-*, Arawak group *piroka* 'flash', Syriac *barqā* 'thunder', Arabic *barq* 'thunderbolt, flash of lightning', Latin *fulgur* 'flash of lightning'.[10]

We should add some observations on certain Indochinese forms which may be linked in particular to those of the second group. We have Meithei *Lāi* 'god, devil', Anal *Lē* idem, Shö *Lhī* 'god', Tibetan *Lha*, Murmi and Kahui-Naga *Lā* 'god'. Comparing these forms with those of the second group, it appears that they have lost the initial consonant, all the more since in Sunwar we have *Palla* 'devil' and in Limbu *Paret* idem (which may stand for *Parēc* but cf. moreover Nubian *filet* 'flash', Santali *bilit'* 'to thunder', Khmer *blet* idem, Sakai *bled* 'flash', Arawak group *–pélita* idem). Khasi nevertheless also has a similar form *lai-lih* 'flash', cf. Atakpame *a-li-la* idem. With a nasalised guttural, we would have Dhimal *Berang* 'god' = Banpara *Baurāng* 'devil', with these forms finding an echo in the Australian languages: (176 – Upper Mackintyre) *booringa*, (149 – Rockhampton & Gracemere) *booroongai*, (179 – Tenterfield, Glen Innes) *booroongi*, (152 – Alice River) *baringa*, (162 – Bustard Bay, Rodd's Bay, Many Peake Range) *baroongi* (cf. Kunama *bilíngā* 'flash').

In the Papuan languages of Astrolabe Bay, we find forms such as Bongu *Buga* 'malign spirit'. Since the Russian naturalist Miklouho-Maclay spent a long time in that region, it may be supposed that the word was nothing other than the Slavic word *Bog* 'god', introduced by him in the same way as *tapor* 'axe' and many others (*Ghotói* 'god' is Germanic).[11]

However, firstly, *Buga* extends to several locations which are quite distant from each other (to Bogadjim in the form *Buka*) and is also find in the Melanesian language of the Siar and Ragetta Islands; furthermore, the meaning of the word ('malign spirit') does not agree with that of the Slavonic *Bog*. Secondly, the word is found in Australia: (155 – Barcoo, Tambo, Mt. Enniskillen & Ravensbourne Creek) *Bogu* 'god', cf. Wiradhuri *Baggin* 'demon'. Lastly, we also find the same word in West Africa: Atakpame *Buku* 'the highest god'. If we think of the profound cultural correspondences which link West Africa to New Guinea and Australia, correspondences highlighted by Frobenius, Ankermann and Gräbner, this is not particularly astonishing. We would have a nasalised form in the Munda languages: *Bonga* 'god, demon, while the African forms, such as Kamba *m-Banga* 'demon' and Konde *na-m-Panga* 'god' differ in the root vowel.

The fact that the type examined here belongs to the *Puluga* series is entirely possible, since both in the Papuan languages and in the African ones, the intervocal liquids *l* and *r* are very frequently eliminated in trisyllabic words. The African type *Mulungu*, *Muluku*, in which *mu-* is a prefix and *-lungu* indicates 'kinship, lineage', is different. The Semitic *Moloch* was compared, a comparison which may also be upheld.

I am not aware of other names of divinities which are as widespread as Puluga. *Gomoi* or *Gomaj* 'god' in Kurku (Munda group) recalls *Kamui* or *Kamuj* 'god' in Ainu, Sakhalin *Kamoi*, Greenlandish *Gum*, Ciugats *a-Gaum*, Kadjak *a-Gaim* 'god', Chukchee *Káma-k* 'devil' = Arawak group *Gama-tsi* 'god, devil' (: *kamui*, *kamoi*, *ghuma* 'sun').

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[8] In his 1927 paper, Trombetti adds the Dravidian forms: Kannada/Kota *belaku* 'light', Telugu *belagu* 'lamp'.

[9] In his 1927 paper, Trombetti adds [The Finnish and Mordvin forms] "are regarded as borrowings".

[10] In his 1927 paper, Trombetti adds Greek φλογ- 'flame'

[11] In his 1927 paper, Trombetti adds Tungus *buga* 'sky', and *buga tûrâttan* 'thunder' (*tûra-n* 'voice').

Thakur 'god' of Mech (Indochinese group) = *Thakur* 'god' in the Munda languages recalls *Tukura* 'supreme being' of Loritja in Central Australia; and this is a type which comes quite close to Turkish *Tangri* 'god' (= *tangri*, *tegri* 'sky'), as well as Sumerian *Dingir* 'god'. Nubian has *Tir* 'god', which may very well derive from *Tigir*.

I shall also recall the following series: Ostyak and Vogul *num* 'above, the superior', Samoyed *num* (Ostyak *nom* and *nop*) 'sky, god'. We may add to this, on the one hand, Indo-European *anā*, *anō*, Greek ἀνὰ, ἄνω, 'above' and on the other hand, the Semitic *'an*, Assyrian *ana*, preposition, *anu* 'sky', *Anu* 'sky god' (cf. *Nabu* = Elamite *nap* 'god' and perhaps also Egyptian *Anubi*, which are derived or compound forms).

To return to our type *Puluga*, I shall also recall a number of forms which lack the final guttural: (which is difficult to derive from **Peruk-nŭ*), Albanian *Pere-n-dí* 'god', Armenian *har-* from **par-* beside *hark-* 'to strike' = Irish *org-* from **porg-* (from the noise produced on striking), *oro-t* from **poro-t* 'thunder', Latvian *pēr-* 'to strike' Finnish *Piru* 'devil'; Australian (138 – Upper Thomson) *borai* (cf. Khasi *Brei*, *Prai*), (177 – Parroo, Warrego and Quininguillan) *barri*, Tasmanian *bura* 'thunder', Turrubul *mum-bal* 'thunder' (also 'god'). For the meaning of lightning front vowels prevail: Kunama *bil* 'to flash, lightning', Fate *na-pil*, Mele *na-pila*, Aruac *bel-beli-ru* 'flash', etc.

The personification and deification of the frightening forces of nature, in particular of thunder, is the one which predominates absolutely everywhere in time and among primitive peoples. It is not my task to linger over this argument and I shall merely permit myself to add that in my view, our own Pettazzoni is on the right track against the notions of Andrew Lang and Schmidt. For this I shall refer to the following note by Prof. Pettazzoni.

Translated from the Italian by *Jonathan Sherman Morris*

Notes on Trombetti's "Puluga" Etymology

Trombetti's "Puluga" etymology brings us back to the early days of ASLIP, when it was not yet ASLIP but the "Long Range Comparison Club." In "Circular Two" (Dec. 29, 1986) Hal Fleming (HCF) outlined what he called "Hannibal's Etymology," beginning with Afroasiatic (= Afrasian: see Table below):[1]

[Hannibal's Etymology: proto-Afrasian ***ḅar–kˀ** or ***ḅil–kˀ**
'bright, shining; flash, lightning; to shine, set fire']

Proto-Afroasiatic initial **ḅ* or **pˀ* plus final **kˀ* are easy to reconstruct because the **kˀ* is nearly universal with Bilen being the only serious problem and **ḅ* for two important reasons. First, we already have evidence of proto-AA **b* "plain *b*". For example, Greenberg (1963)'s #20 "to come", which means "go" as often as "come", has initial /b/ in Chadic, Cushitic and Semitic. I would add to that South Omotic (Dime) *biʔ*. Since Dime /i/ often matches non-Omotic /a/, the match-up seems perfect, e.g., Arabic *baaʔ*, Beja *baay*. The Dime form is an archaism in Dime and not found in neighboring languages.

So Omotic and some Cushitic /ḅ/ :: Semitic and other northern /b/. Ergo Semitic lost a **ḅ*.

These Afroasiatic forms might be cognate with Indo-European forms, such as English "bright" < P-IE **bhrag* or **bhrak*, depending on Sanskrit *bhraj* and Old Germanic **brixt* (and Robby Burns too!).

Watkins (in *American Heritage Dictionary*) gives **bherEg* with by-form **bherEk* meaning "to shine, bight, white". But he also lists **bhel-* meaning "to shine, to flash, burn; shining white and various bright colors; fire". He later in the discussion of **bhel-* cites a zero-grade (form without vowel) form **bhlg* which is the source of Latin **fulg-men > ful-men* = lightning, thunderbolt, as well as *fulgere* = to flash, lighten.

Therefore, it seems that an equation or matching up can be made like this:

proto-Afroasiatic	*** ḅ**	**a**	**r**	**–**	**kˀ**
or	*** ḅ**	**i**	**l**	**–**	**kˀ**
:: p-IE	*** bh**	**e**	**r**	**E**	**g**
or	*** bh**	**–**	**l**	**–**	**g**

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[1] Minor format changes have been made. Hannibal *Barca*'s cognomen meant 'thunderbolt' in Punic, similar to the Aramaic cognate *barqā*. A cognate surname was adopted by Israeli leader Ehud Barak (né Broga). [Ed.]

Table: The root **ḅar–k̓ / *ḅil–k̓* in Afrasian

family	sub-family	sub-sub-family	language		gloss	notes
Cushitic	Eastern Cushitic	PEC (Sasse)		*bark̓- / *birk̓-	lightning	Sasse's PEC is clearly wrong. It should be * ḅ
		Lowland EC	Arbore	biliʔ-ito	lightning	
				bol(o)k̓	shine, catch fire	
				bolok̓-Б	set fire to, kindle	
		Yaakuan-Dullay	Harso	ḅaqq-o	lightning	[ɓ = glottalic ingressive; These /q/ have allophones in [g̓]
			Gollango	ḅaq	to lighten	
		Highland	Sidamo	bank̓	lightning	
	Central Cushitic	Agau	Bilen	baraq	lightning	< Semitic?
				bilic̓-	to lighten	
	Southern Cushitic	Dahaloan	Dahalo	ḅirik̓-iina	lightning	
? Chadic	Eastern		Hausa Karekare	walk̓-iya wAliʔ-yo	lightning	Phonetic doubts RE inclusion
Egyptian			Ancient	b r q	shine	Greenberg
Semitic	Eastern		Akkadian	birq-u	lightning	
	Central		Ugaritic	b r q	lightning	
	Southern		Amharic	bArak̓	lightning	
				b r k̓	verb base	
Omotic	Northern	Gongan	Mocha	p̓arik̓	lightning	
	Southern		Dime	ḅElx-An p̓ Elx-An	bright, shiny	Dime [x] < *k̓

In the next issue, "Circular 3," HCF quoted John Bengtson's letter with some additions to "Hannibal's Etymology":

Niger-Congo: (Bantu) Swahili		**mulika** 'shine, gleam, make light'
(Bantu) Rundi		**murika** 'éclairer'
Nilo-Saharan: Kanuri		**mollak** 'lightning'
Sumerian:		**pirig** 'be bright'
Altaic: Korean		**perak** 'flash of lightning'
Yukaghiran: Chuvan	pon-	**pałag**-enij 'Nebel' ['fog']
Eskaleutian: Yupik	kinix-	**piłag** 'lightning'
Arawakan: Kinikinao		**paruka**-ti 'lightning'
Jamadi / Jaruara		a-**baliku** 'moon'
Austronesian: Bugis		**bilak** 'lightning'
Rotti		**bulak** 'moon'

* * *

Additional notes [Ed.]: Twenty-six years later, with more etymological resources available, we are in a more advantageous position to explore these lexical sets. We shall not attempt here to follow up on *all* of Trombetti's wide-ranging etymological comparisons – a task which could easily become a book in itself – but mainly the ones that connect with "Hannibal's Etymology."

The Tower of Babel site[2] cites the Borean cognate set **PVRKV* 'bright', based on the following subsets:

Eurasiatic: **bVrḳV* (=**bVrkˀV*) 'shine, bright'
→ IE **bhrēǵ-* ~ **bhrēḱ-* (see above)
+ Kartvelian: Old Georgian, Georgian *brkˀial-* 'glitter, shine'
Afroasiatic: **bariḳ-* (= **barikˀ-*) (see above)
Sino-Caucasian: Cf. Proto-Sino-Tibetan **p(r)ɨāk* 'white'[3]

There is also the variant with /l/: PIE **bhleiǵ-* → German *Blitz* (OHG *blěcchazzen*, verb), *bleich* 'faded, pale', Engl. *bleak*, Swed. *blek* 'pale', *blixt* 'lightning', etc.; Russian *blesk* 'glitter, brilliance'; Lithuanian *blīkšti* 'be white, pale', etc. (Apparently restricted to northwestern Europe.) The Nostraticists prefer to keep this root separate from **bhrēǵ-* ~ **bhrēḱ-*, but I suspect some old *l* ~ *r* apophony could have been in play (Swadesh 1971; Wescott 1998; Bengtson 1998).

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[2] http://starling.rinet.ru/

[3] But when we go to the Sino-Tibetan database on the same site we find PST **pɨāk* 'white', and /r/ is only found in Old Chinese **brāk* 'white' > Beijing *pai*^{12}, Cantonese *pāk*^{42}, etc., opening the possibility that the original segmentation was really **r-pɨāk*, with metathesis of the prefix in Chinese (not a seldom phenomenon in Sino-Tibetan: see Matisoff 2003: 81, 101, 151, etc.). **brāk* is the Starostin OC reconstruction, where Karlgren, e.g., had **b'ăk* 'white'. P. Benedict and his acolyte J. Matisoff set up Proto-Tibeto-Burman **bok* 'white', based (like Peiros/Starostin's PST **pɨāk*) on Chinese + (Kuki-Chin) Sho *bok,* Garo gi-*bok* ~ gi-*pok*, Limbu *phokhiyā* 'white', etc. All this leads us away from the *P R K* ~ *B L G* forms discussed here.

As shown by Trombetti, this root is surely older than Borean, since it definitely is widespread, for example, in Papua, in the Trans-New Guinea family (part of Greenberg's Indo-Pacific macrophylum): e.g. (SE) Binandere *birigi* 'lightning'; (Finisterre-Huon) Kâte *bɔric* 'glitter, flash of lightning (verb)',[4] *bɔbɔric* 'lightning, brightness'; Selepet *belek* 'lightning'; (Madang) Bongu *burug* id.; Ukuriguma *bilika* 'be light (verb)', etc. Because of numerous forms beginning in /m/ (e.g., Kalam *melk* 'light'; Pila *mulikan-* (verb); Moresada *merak* (noun); Blagar *merax* 'lightning', etc.) Pawley (2011) sets up Proto-Trans New Guinea **(m,mb)elak.*[5] [Ed.]

* * *

Michael Witzel adds:

The global etymology seems fine to me; however as *Puluga / Biliku* refers to the Andaman northeast monsoon, I do not see much connection with 'lightning, white', etc. The southwest monsoon (= Indian monsoon) brings dark clouds and a lot of rain, the northeast one is generally dry (also in New Guinea), therefore "white" ??

The origin of the Andamanese word may have some connection with *Puluga*'s other usage as "creator" or trickster ?? (Witzel 2012, p.310). As Andaman people are dark colored, spirits are white (also in Papua, Tasmania, etc.)

* * *

Jonathan Morris adds:

My only point, and I'm no expert on Andamanese mythology, is that according to George Weber (2003-2009), various tribes have legends with Puluga as the creator of fire – and as he notes, they had to derive fire from lightning:

The Andamanese could not make fire themselves but had to nurse it carefully in special containers they carried around with them on their frequent wanderings. If the fire was allowed to go out through carelessness or accident, a new flame had to be sought from a friendly neighbouring sept (which would be embarrassing) or a natural fire caused by lighting had to be awaited.

One version of the legend we have just read above. Other versions have the fire given to the people by the god Puluga (Biliku) directly. One Aka-Jeru version has someone shooting an arrow at a "hill of fire" whereupon it caught fire. The burning arrow was found and brought to its camp by the kingfisher bird. The bird refused to share the fire with the people who, after asking for it in vain, stole and kept it for themselves. Neither Narcondam nor Barren islands were known to the Andamanese. Both are occasionally active volcanoes and are just out of sight of the archipelago. Both would certainly have been known, if perhaps only from afar, to the Andamanese at times when the sea level was lower with the islands bigger and closer together. In full eruption either of the two volcanoes would have been quite impossible to overlook and their plumes of ash and smoke visible from afar.

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[4] The palatalization of **k* > /c/ is convergent with that in (Cushitic) Bilen *bilicˀ-* 'to lighten'; (IE) Sanskrit *bhrāśate, bhrāśyate* 'to shine, glitter', *bhrā́jate* 'to shine, beam, glitter', etc.

[5] (N.) '(1) lightning, lightning flash, (2) light, brightness'; (V.) (1) 'to flash (of lightning etc.), (2) be light (as of firelight or sunshine)'.

Hence, assuming that Weber is correct, the link to lightning is much more explicit than Michael's comment about Puluga being associated with the monsoon suggests.

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We are deeply thankful to Jonathan Morris for providing the translation of Trombetti's "Puluga.," a vivid example of the fertile mind of this grandfather of all long-rangers, whose prolific work has been mined ever since by the Nostraticists and other paleolinguists.

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Linguistic Contacts between Kamchukchean and Eskaleutian:

The Problem of Lexical Loans, and Their Nostratic Etymologies[1]

Nikita Krougly-Encke
Paris

0.1. Linguistic situation around the Bering Strait.

Linguistic links between Chukchean (a branch of the Kamchukchean family) and Eskimo languages (a branch of the Eskaleutian family) have been noticed by Europeans since their first acquaintance with these languages. These links are not surprising in view of the fact that everyday relationships or even bilingualism between Chukchee and Siberian Yupik speakers remains till today on the Western Coast of the Bering Strait, in other words, the Far-East of the Chukotka Peninsula. These contacts of Kamchatkan languages on the one hand, and of Aleut on the other, are at least problematic for the time being.

Apart from the question of long-range relationships between the families in question, the very first contacts between the Chukchean and Eskimo speakers go back at least to the 1st millennium B.C., when the Chukcheans, more warlike and economically and technically advanced, arriving from the South-West, began to encroach upon the immense territories formerly occupied by the Eskimos on the Asian continent.

First, let us go back to the Proto-Eskaleutian period. Several archeologists and linguists agree that the Eskaleutian homeland is on the American coast, *i.e.* Western Alaska. Glottochronological calculations following the M. SWADESH - S. STAROSTIN method place the split of Proto-Eskaleutian around the 18th century B.C.; and of Proto-Eskimo to Yupik, Inupiaq and probably more branches, of which the Sirenikski language would be the last remnant, at the middle of the 1st millennium B.C. Aside from the general northeastern advance of Eskimos during the last centuries B.C. and the first centuries A.D., some of them would go West and cross the Bering Straits to occupy the immense territories in Asia going as far as the Bear Islands to the North of the Kolyma mouth and Magadan on the Okhotsk Sea. Such is the opinion of several archeologists, notably Robert ACKERMANN [1984], quoted by Willem DE REUSE *op. cit.*

As to the 2nd millenium B.C., any presence of the Kamchukchean ancestors in the Beringia region is out of the question. They were to arrive in the Northern Far East only in the second half of the 1st millenium B.C., settling around the Okhotsk Sea, then moving up to the Anadyr River region as late as the 5th century A.D., when they fought violent wars against the Eskimos. The Itelmens, once isolated in remote regions of the Kamchatka, and the Chukchee-Koryaks have experienced an important demographic compression thanks to the technical and economic progress acquired by them in contacts with Tungusic populations. The Tungusic people taught them reindeer (caribou) domestication, and also iron ware. This knowledge was transmitted to the Eskimos only much later on, and practically never to the Aleuts. On the other hand, once they arrived on the Pacific Coast, several Chukchean and Kamchatkan populations learned fishing and sea hunting from their Eskimo neighbors, but the main economy of these Chuckchean and Kamchatkan populations continued to be based on reindeer breeding.

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[1] The first version of this article was written in French in order to be published in a collection dedicated to Claude Hagège's 70th birthday but was rejected by the editor for technical reason.

In accordance with what has been mentioned above, nobody would be surprised by the overwhelming predominance of lexical borrowings made by Eskimo languages from Chukchee-Koryakan. The reason seems to be evident in the case of cultural terms, but surprising in the case of terms connected with nature, and particularly, animal names. One would expect a more important number of borrowings in the opposite direction, considering the fact that Yupik Eskimo occupies a substratum position in relation to Chukchee-Koryakan languages. A large number of borrowings has been itemized by Willem DE REUSE [1994: 330] who cites more than 200 lexical items in Siberian Yupik borrowed from Chukchee-Koryakan, more than a half of which are auxiliary items. Borrowings in the opposite direction represent only about 10% of borrowings. The investigator also supplies a list of less reliable parallels or parallels whose direction of borrowing is uncertain. Oleg A. MUDRAK discovered an important number of borrowings, only partially coinciding with those discovered by Willem DE REUSE. Yet another part was found out by myself.

Another author who cites several lexical parallels between Eskimo (sometimes with Aleut cognates) and Chukchee-Koryakan (sometimes with Itelmen parallels) is Michael FORTESCUE [1998: 133-138]. He did this within the framework of the Uralo-Siberian hypothesis, first advanced by Knut BERGSLAND, in order to prove the existence of a remote relationship between the four linguistic families to which Eskaleutian and Kamchukchean belong. Unfortunately, in the most commonly cited cases we deal with ancient borrowings in which a part is made up of phonetically or semantically dubious comparisons, and only one part can claim the status of genetic cognates.

Here I have used the method of broad comparison, unfurling eventual Nostratic etymologies from the Kamchukchean side, as well as from the Eskaleutian one. In spite of the fact that the exact phonetic correspondences for the both “Micro-Nostratic” proto-languages are far from being definitively established, Oleg A. MUDRAK and I have been working toward this goal for several years. To a large extent this helps us to separate ancient borrowings from common back-ground inherited by ancestral languages from their common Nostratic ancestor.

A. Borrowings from Kamchukchean to Eskaleutian.

A.1. PE _*paluʁta- (~ -ł-)_ ’beaver’: PYpS _*paluʁta-_, PIn _*paluqt(a)-_ [ME 466] / _*paluʀtaʀ_ ’beaver, sea otter’ [CED: 248]; Al (E) _halu[-]χ_ ’river otter’ [AD: 56]).
←b O.MUDRAK points to the borrowed character of the Eskimo item from PChk _*peʒluq_ ’beaver hide cap’, _*-te_ ’beaver’ (with PKm _*păhel, *pẹ̌hъl_ ’cap’ < PKCh _*pehlə-_ ’beaver; beaver hide cap’ [ЭСЧКЯ: 108] (_*pejəl-_), [MK 86], [СКЛ: 151]).
Actually, the Aleut item might be cognate with Eskimo, v. [CED: 248], [AD: 56] (< PEAl _**paluʁ-_ ’beaver, sea otter, river otter’), but this is out of the question for chronological reason. Thus the Aleut item is a loan from Eskimo, since it has a genuine Aleutian cognate.
[] PIE _*bhēl-_ ’squirrel, marten, polecat’ [NIE 106], [WP I: 177] (otherwise in [IEW: 119]), PUr _*poyŁV_ ’ermine’ [DN: N°281], PAlt _*balu_ ’sable’ (PMng _*bulagan_ ’sable, game’, PTM _*bali-_ ’sable (one year old)’, PJap _*puruki_ ’a k. of sable’) [EDAL: 326], PDr _*[b]il-_ ’cat’ [DEDR: N°4180], [GSD 140] (_*Pil-_), Al (E) _hūlŋɨ̄χ, ūlŋɨ̄χ_ ’[arctic] ground squirrel _Citellus parryii Rich._ (on Alaskan peninsula and Unimak)’ [AD: 436] < PN _*bAHŁu_ ’a k. of small fur-animal’ [ESHSAN: N°50], [DN: N°281] (_*bUjẑV_ ’fur-bearing animal’: IE, Ur, Alt, PDr _*pul-_ ’tiger’), [SN 653] (_*balV_ ’sable, squirrel’: IE, Alt, Dr), [PNHRAN: N°5.3] (~ Al, KCh).
|| PN *H > PUr *j in several palatalizing contexts.

A.2. PE _*manIГ (-ərГə)_ ’tussock, moss for kindling, fabric’: PYpS _*man(i)ɣə (-rГV)_ ’fabric; tussock for kindling’, PIn _*manəʁ_ ’tussock; moss for lamp wick’ [ME 176] / _*manəʀ_ ’tussock (of moss)’ [CED: 190].
|| Notwithstanding K.BERGSLAND [AD: 190] and the authors of [CED: 190], the linkage to PAl _*hanāta-_ ’to have the size of’ (_*hana-_ + _*-āt-(ʁ)ta-_), _*hana-tu-_ (E) ’to be thick (as of a log or rope, or of a book)’, (Att) ’big roundish mountain’ [AD: 70] looks semantically very questionable; q.v. the genuine Aleutian cognate.
←b PChk _*maniɣ_ ’sth. woven bag, woven trousers’ (with PKm _*múmxə (~ *mùmx̣ə)_ ’basket’ < PKTch _*mėniɣ_ ’basket, sth. woven’ [MUDRAK 2000: 92], [MK 11], [СКЛ: 138]), the suffixe _*-ərГə_ reflecting a medial forme of PChk _*-əšɣə_ > Chk _-ərɣə_ ’skin, coverture’, lit. "woven coverture".
[] PIE _*m^{e}n-i-_ ’a k. of herbaceous plant’ [NIE 2171] / [WP II: 263], [IEW: 726] (zu _*men-_ ’treten, zertreten, zusammndrücken’), PA _*mina (~ -o, -u)_ ’a k. of grass’ (PTrk _*bɨnan_ ’a k. of grass (солодка, лебеда)’, PKor _*minari_ ’celery, parsley’) [EDAL: 917], PAl _*hini-_ ’wick, grass wick of a stone lamp; candle; lamp’ [AD: 202] < PN _*minV_ ’a k. of grass (moss or sim.)’ [K-ENB] (IE, Alt, Al).

A.3. PE **məciʁ-aʁ* 'melted grease': PYpS **məciГaʁ*, PIn **micəʁaʁ* [ME 211] / **məciʀaʀ* 'oil dip' [CED: 196].

|| < **mətiʁ-*. No cognation with genuine PE **məcu* 'juice, sap, coloured liquid' [ME 210] / **məcu(ɣ) ~ *məcuR* 'moisture or liquid', PIn **macaɣ, *macca-ʁ-* 'moisture, slush, wet snow' [MIn 193], PYp **mi/əci-, -ʁ-* 'soak, get soaked', nor to PE **məca-ɣ* 'swamp, pool; [to champ, smack]', q.v.

←b As pointed out by O.Mudrak, the Eskimo item is borrowed from PChk **mətqə* " 'fat, butter' (with PKm **hămi̯lhъ̥, *hȧmsuɦъ, *ɦȧmilhъ̥* 'fat' < PKCh **məƛqə (-ƛ̦q-)* 'fat, butter' [ЭСЧКЯ: 94] (**məsqʷə*), [MK 23]). According to this investigator, the latter is linked to PYk **molɣə* 'middle, inside; inside (postp.)' [MYk 277], [ПУЮГС: 311] / sub **molqə* '[joint; six, eight; knee;] middle; in the middle; to be in the middle; [to trick; to rob; hollow; entrails, interior]' [ПУЮГС: 312], [HDY: N°1263]. Nevertheless, PYk **molɣi-* 'joint; knee' [MYk 895] (confused in [HDY: N°1263]), is akin to PNv **malq* 'knot' [MNv 1907] and PIE **mal- / -e-* 'member (of body)' [NIE 771] / **mel-* 'Glied; zusammenfügen' [WP II: 292], [IEW: 720] (+ Tokh B mlyuwe 'thigh' [Adams: 480]) < PN **mAL(H)V* '(a k. of) joint' [K-ENB].

[] Cf. PIE **mazd- (*mad-t- ?)* 'fat' [NIE 731] / [WP I: 231-232], [IEW: 694-695] (zu **mad-* 'naß, triefen; auch von Fett triefen, vollsaftig, fett, gemästet', **mad-do-* 'Mästung'), Fin *mehu* 'juice' < ? PN **meć‘ʷV (~ -č‘(ʷ)-, ? -ǯ(ʷ)-)* 'juice; fat'.

// Genuine PEAl **məcu(-)* 'to pour out, spill; moisture, liquid' [CED: 196], [AD: 465] (PE **məcu* 'juice, sap, coloured liquid': PYpS **məcu-*, PIn **micu* [ME 210] / **məcu(ɣ) ~ *məcuR* 'moisture or liquid' [CED: 196], **məcuŋ-* 'wet, soaked; to dip in water': PYp **məcuŋ-*, PIn **micuɣ-* [ME 212] / PYp **məcuŋə-* 'to get wet' [CED: 196]; PAl **hju-* 'to run out, pour out, spill (of liquid), run, flow (of liquid, of river), leak, (tr.) pour out, spill, ejaculate; outflow, what runs out, flood tide' [AD: 464-465]), PEAl **məca-* 'swamp, pool, flood tide' [CED: 195], [AD: 462] (PE **məca-ɣ* 'swamp, pool; [to champ, smack]': PYp **məca-ɣ*, PIn **mica-ɣ* [ME 203] / **məcaɣ* 'swampy ground', PYp **məcaliqaq* 'sleet' [CED: 195-196], **məcaR-* 'to make splashing or smacking sound' [CED: 196], PIn **macaɣ, *macca-ʁ-* 'moisture, slush, wet snow' [MIn 193] / **mac(c)ak* 'moisture, slush' [CED: 184]; PAl **hja-* 'flood tide; to be covered up by the tide (of the beach)' [AD: 461]), cf. PYp **mi/əci-, -ʁ-* 'soak, get soaked' sub **məcu(ɣ) ~ *məcuR* 'moisture or liquid' [CED: 196] are cognates with PIE **mezg-* 'to drown, sink into the water' [NIE 2213] / **mezg-* 'untertauchen' [WP II: 100-101], [IEW: 745-746], PUr **muske- (*moske-)* 'to wash / waschen' [FUV: 35], [UEW: 289] / **moskɨ-* 'wash' [SW: 62], [HPUL: 538], PDr **mac-* 'to wash (the head)' (Prj *mac-*; Br *mashing*) [DEDR: N°4634] < PN **mVcV (-kV)* 'to drown, dive, wash' [ГДР: 2] (IE, Ur + AA), [МССНЯ: 349] (**m/o/ç(k)ʌ* 'мыть / to wash': IE, Ur, Br + AA), [ОСНЯ 2: N°304] (**muçʌ* 'мыть / to wash': IE, Ur, PDr **mī-* (+ NDr) + AA: Sem, ECsh, Om, CChd), [DN: N°1361] (**muçV(-kV)* 'to immerse, wash'), [SN 394] (**mus(k)V ~ -ʒ-* 'to wash': IE, Ur, Dr), [LRABS: 143] (Fin *mehu* 'juice', EAl, Chk), [K-ENB] (~ EAl).

A.4. PIn _*miʁi-qɬi-ʁ (~ -ə-)_ ’child’ sub [MIn 288] / _*mikəqləqtuq_ ’child’ [CED: 200], heavily contaminated by the original PE _*mikə-_ ’small’, q.v.
←b Compound of PChk _*əmqə-_ ’small, younger’ and _*-qɬik_ medial form _*əqLik_ ’man, male’, i.e. "little=male", q.v.
[] The first part of Chukchean compound (with PKm _*’ъ́mqъ-, *-ъmqъ-č (~ *-ъmъ̀ʔ-č)_ ’boy’ < PKCh _*’əmqə̇-_ ’small; boy’ [ЭСЧКЯ: 33], [MK 630]) presents a fusion of two Nostratic roots, attested in IE: PClt _*mak^{W}(k^{W})o-_ ’son’ [VENDRYES 1983: M-1-2], PAlt _*mūk‘o (~ -u)_ ’male’ (PTrk _*būka_ ’bull’, PMng _*mok-_ ’2-years old male deer; penis’, PTM _*muxa- / *muxe-_ ’man, male’) [EDAL: 951], PDr _*maɣ$_{1}$-_ ’male’ [DEDR: Nº4616], [GSD 761], PE _*makla-_ ’[bearded] [leporine, great, long-bodied] seal’: PYp _*maklaɣ-_ ’seal: variegated, spotted seal, bearded seal, PIn _*makla-_ ’bearded seal’ [ME 161] / _*maklaɣ_ ’bearded seal’ [CED: 185-186] < PN _*mAk‘U (~ -q‘-)_ ’male, male child’ [DN: Nº1391] (_*maKU_ ’baby, son’: + dub. K and IE), [SN 1034] (_*mVḳV_ ’male, male child’: A), [K-ENB] (~ E), and PIE _*smeik-, -g-_ ’thin, narrow, little; twig, pole; crumb’ [NIE 1092] / _*smē-, *smeɨ̄-, *sm-ei-_ ‘schmieren, darüberwischen, -streichen; darüber hinreiben’ [WP II: 685-686], [IEW: 966-967], PE _*mikə-_ ’small’: PYpS _*mikə-_ ’small; kid, small boy’, PIn _*mə̉kə̈-_ ’small; child’ [ME 229] / _*mikə- ~ *mikət-_ ’be small’ [CED: 200], PNv _*məʁa-_ ’young-looking, young’ [MNv 1999] < PN _*mik‘V (~ -q‘-)_ petit’ [IICR 2: Nº347] (_mik_ ’small’: IE, E, Nv, KCh), [MPS 1001] (PPS ’small; young’), [K-ENB] (IE, E, KCh).
|| Cf. also PIE _*mē̆ġh-_ ’small; small finger’ [Fraenkel: 422], [NIE 2274], PIn _*miʁa-ju-_ ’newborn baby, child’ [MIn 299] / _*mi(i)Rayuq_ ’child or young animal’ [CED: 202] and PKCh _*mi̠ɣ^{W}i̠_ ’fry’ (PChk _*miɣi_ ", PKm _*maɣ^{W}ȧ-_) [ЭСЧКЯ: 97], [MK 27].
[] The second part (with PKm _*’ìhɨḷħъ, *’íhḷih_ ’husband’ < PKCh _*’əqɬ̇i-k_ ’man, male’ [Mudrak 2000: 35], [MK 620], [СКЛ: 62-63]) is akin to PAlt _*kū̀lV_ ’servant, slave’ (PTrk _*Kul_ ’slave, servant’, PTM _*kēlu-me_ (< _*kūle-me_ ?) ’servant’, cf. Klm _keln_, WMng _kele_ ’slave’) [EDAL: 735-736] < PN _*kVlV_ ’boy, servant’ [DN: Nº1912] (_*q̇ul[ä]_ ’boy, child’), [K-ENB]. Any relation to PK _*q̇wer-_ ’testicles; to castrate’ [EWK: 414], [EDKL: 240-241], PIE _*k̑eul-_ ’testiculi’, PUr _*kō̆le_ ’testicles’ [Setälä] / _*kol’e_ ’Hode(n)’ [UEW: 175] < PN _*q‘ȯlV_ ’testicule(s)’ [Trombetti: 100] [I-S 1968: 7.3], [МССНЯ: 373] (_*q̇olʌ_ ’яичко (testiculus’: K, Ur + AA), [SN 901] (_*ḳȯlV_ ’testiculus’: K, Ur, ? Evn, both Dr), [DN: Nº1041] (_*Ḳo[y)(V)lE_ ’testicles’), [DN: Nº1920] (_*q̇Uĺ(V)[ʕ]V_ ’penis’, with much conf.)?
|| Cf. also PK _*q̇al-_ ’penis’ (cf. Svan _q̇law-_ ’male child’) [EWK: 406] / _*q̇le-_ ’penis’ [ЭСКЯ: 210], [EDKL: 243-244], TM: Evn _kụlba_ ’bull’s or wild ram’s scrotum’, PSDr _*goḷ-ai_ ’anus’ [DEDR: Nº2159], [GSSD 1865] and PSDr _*gojil-_ ’pudendum muliebre’ [DEDR: Nº2138], [GSSD 1848].

A.5. PYp _*muɣu-_ ’nomad’s packtrain’ [MYp 1097] / _*məɣə-, *muɣu-_ ’to go off far’ [CED: 196-197], cf. _*məɣra-_ ’run’: Sir _məɣcəɬəʁ, məɣraʁnəŋ_ adv. [MYp 1102].

←b O.Mudrak [MYp 1097] identifies the Yupik item as a loanword from PChk **əmɣu-lʁə-n* 'nomadic', in fact, a derivative from a non-attested verb. M.Fortescue [LRABS: 135, 155] adduces these items as cognates. Borrowing is excluded, however, for the Samodic item.

[] PK **mqw- (*nqw-)* 'to fall, fall over' [ЭСКЯ: 149] (**nqw-*), [EWK: 256-257], [EDKL: 134-135], PIE **(a)mewə-* 'to move; to drive' [NIE 2152] / **meu̯-*, **meu̯ə-* 'fortschieben' [WP I: 252-253], [IEW: 743], PSmd **müɣ* 'day's journey by caravan', **müə-tä-* 'to roam' (+ Nen *mud* 'caravan', *mud-tä-* 'to nomadize, roam'), PChk **əmɣu-* 'nomadic; string of sledges' [ЭСЧКЯ: 187] (**məɣu-*), [MChk 823] < PN **mVqʷV* 'to move, roam, nomadize; to drive' [DN: Nº1455] (**miqU(ʔV)* 'to push, fell, overturn': K, IE + Sem and dub. Eg, Irq), [SN 118] (**mVqwV* 'to move; to push'), [LRABS: 135, 155] (Smd, Yp, Chk).

A.6. PE **Naɬu[Γ]a-* 'white bleached skin': PYp **NaɬuΓaɣ* 'bleached seal skin', PIn **nalu(r)a-* [ME 279] / **nalu(C)aʀ* 'bleached skin' [CED: 210].

←b O.Mudrak is right in suggesting the borrowed character of the Eskimo item from PChk **naƚɣə-n* 'skin, hide' [MChk 876] (with PKm **xi-nsx[u]* 'hide' < PKCh **neƛ́ɣə* 'hide' [ЭСЧКЯ: 98, 188] (**nĕƛɣə*), [MK 43]), which is derived from **naħ-* 'to fabricate, taw skin' [MChk 875].

[] PUr **ńülke-* 'to skin, hull, shell, pluck' [UEW: 319] (+ Nen (GrL) *nalka* 'to be pulled out, slip out (as a knife from sheath)'), PE **nəlŋu-(ʁ-)* 'tough but elastic': PYp **(n)əlŋuʁ-*, PIn **nənŋu-(ʁ)-* [ME 358] / **nəlŋu(R)-* 'be tough or flexible' [CED: 226], PYk **nelbu-* 'to skin' [MYk 827] < PN **nelV (-Kʷ/QʷV)* 'to pull out, to skin' [K-ENB] (Ur, E, Yk).

|| V.Blazek [Blazek 2007: Nº44] links Kamchukchean item to PFB **naška (~ -č-)* 'skin' [SKES: 364]: a loanword from any Kamchukcheoid ad/substratum?

A.7. PE **Naʁuɬə-* 'weasel, ermine': PYp **Naʁuɬəɣ*, PIn **naulaju-* 'least weasel' [ME 330] / PIn **naula(yu)q* 'weasel' [CED: 221] (noting also Yupik forms).

←b PChk **rawъl̇ʁɨŋ (~ l-)* 'squirrel' [MChk 1195] (with PKm **-əlɣʷilə-č*, **neɣul'iʷ-* 'mouse' < PKCh **šȧɣʷъl(hə)* 'squirrel; mouse' [ЭСЧКЯ: 200] (only Chk), [MKCh 1053], [СКЛ: 52-53]).

[] PK **ʒaɣl-* 'dog' [ЭСКЯ: 236], [EWK: 484], [SK 1264], [EDKL: 283], PIE **(s)kol-* 'puppy' [NIE 1043] (diff. in [WP I: 443], [IEW: 550]), PAlt **solukV (~ z-, -l-, -a-, -k'-)* 'a k. of small fur animal' (PMng **soluŋga* 'kolinsky', PTM **sulak* 'fox', PKor **sȧrk* 'badger; wild cat') [EDAL: 1307-1308], PDr **ǯā[v]il-* 'dog' [DEDR: Nº2459], [GSD 1934], PAl **sāɣla-* 'dog' [AD: 345], PYk **salvi-* 'mouse' [MYk 1020] / **söjl- / *sejl- / *sajl-* 'mouse' [Nikolaeva Diss.: 321], [ПУЮГС: Nº2265], ?ϕ PNv **olBilak* 'flying squirrel' [MNv 278] < PN **ʒaɣulV (~ -x-)* 'a k. of small fur animal (weasel, ermine)' [DN: Nº2728] (**ʒaɣil/lV* 'a k. of dog': K, Alt + AA: Sem, ? Dnk), [SN 1651] (**ʒaɣlV* 'dog, fur animal': K, IE, Alt, Dr), [Dybo 2004: Nº29.5] (**ʒaɣlV* 'dog, fur animal': K, IE, Alt, Dr),

[MPS 598] (PPS ’mouse; squirrel’), [K-E 2008: N°2.4] (~ Al).
|| Regular substitution of PChk *r- with PE *n-? Metathesis and voicing assimilation in Altaic (or Kartvelian?).
|| Cf. PAlt _*sialo(-kV)_ ’a k. of small fur animal’ (PTrk _*sialɨk_ ’a k. of squirrel, chipmunk’, PMng _*sileɣü-sü_ ’lynx’, PTM _*solüki_ ’kolinsky; ferret’, PKor _*sɨra-_ ’lynx’) [EDAL: 1266] (< PN _*c‘AlV (~ -s-)_).
|| O.MUDRAK links Kamchukchean and Yukaghiric items to PNv _*olBilak_ ’flying squirrel’ [MNv 278] (PPS ’mouse; squirrel’ [MPS 598]), which is nevertheless phonetically questionable.

A.8. PE _*nəvi(a)ʁc(əɣ)a-_ ’girl, young woman ready to get married’: PYp _*nəviʁca- ~ *naʁca-_, PIn _*niviaqcəɣa-_ [ME 392] / _*nəviCaʀ_ ’girl’ (Sir _naχcəʁraχ_ ’little girl / young woman’, _naχsəɣraχ_ ’girl’, _naxcəx, naxsəx_ ’woman’) [CED: 233]. ←b O.MUDRAK’s suggestion, regarding Eskimo item as a loan from the PChk compound _*ŋebə-cqet_ ’woman’, the first part of which being PChk _*ŋebə-[cqet, -ɫŋъ-n]_ ’female’ (with PKm _*ŋ̊im-sxi, *-utku_ < PKCh _*ŋʷe’mə-[sq(w)ə-(’n)]_ ’woman’ (litt. "female-woman, elder sister") [ЭСЧКЯ: 101] (_*ŋe’mə-sqə_), [MK 58]), and the second identical to PChk _*cakɨʒtъ-, *cakъɣɨt_ ’sister (of brother or sister); woman; wife’ (with PKm _*skwa-n, *-sx_ ’sister; woman’, cf. _*-śx_ ’woman (in comp.)’ < PKCh _*śakъvɨ-(’n)_ ’elder sister; woman’ [MK 424]), q.v., looks more convincing than the eventual linkage to PN _*newi_ ’new’.
[] The first part of the compound is akin to PIE _*(e)jena-t-er-_ ’brother’s wife’ [NIE 410] / _*ienəter-_, schwache Kasus _*iₑnətr-_ (_in̥tr-_) ‘die Frau des Bruders des Gatten’ [WP I: 207-208], [IEW: 505-506], PUr _*niŋä_ ’woman’ [COLLINDER 1960: 408] / _*niŋä_ ’Frau, Weib, Weibchen / woman, wife’ [UEW: 305], PAlt _*néŋu_ ’female relative (sister or brother’s wife)’ (PTrk _*jeŋe_ ’elder brother’s wife’, PMng _*nagaču_ ’maternal relative’, PTM _*neŋu-_ ’sweetheart; younger (brother, sister)’, PKor _*nu’ɨi_ ’(boy’s) sister’) [EDAL: 970-971], PDr _*nēnḏ-_ ’female relative’ [DEDR: N°3644], [GSD 1000], PE _*nəŋju-_ ’grandmother, old woman’: PYpS _*nəŋju-_, PIn _*niŋiu-_ [ME 370] / _*nəŋyuR_ ’oldest woman in household’ [CED: 228], deriv. in PEAl _*nəŋa-Ru-_ ’son-in-law, brother-in-law’ [CED: 227], [AD: 282] (PE _*nəŋaru_ ’son-in-law, brother-in-law (sister’s husband)’: PYpS _*(ə)nəŋa[r]u_, PIn _*niŋau-ɣ_ [ME 365] / _*nəŋa(C)u(ɣ)_ ’son- or brother-in-law’ [CED: 227]; PAl _*naʁu- ~ *ŋaʁu-_ ’son-in-law, brother-in-law, wife’s brother, husband’s mother, father-in-law’ [AD: 282]), PYk _*moŋoj-_B ’female (of bird); (married) woman; to marry’ [MYk 397] / _*moŋoji:_ ’female of a bird’ [ПУЮГС: 311], [HDY: N°1277] (metath. of nasals), PNv _*(n)um-gun_ ’woman; wife’ [MNv 340] < PN _*neŋʷV (~ -ŋu)_ ’female relative, oldest woman in household’ [DN: N°1607] (_*ni/eŋHV_ ’woman’), [SN 337] (_*nVnV_ ’female-in-law’: IE, Ur, Alt, Dr), [LRABS: 135, 143] (Ur, PE _*nəŋ-juʁ_, KCh), [IVANOV 2000: N°14] (~ Al _ŋaʁu-_, with much conf.), [MPS 1448] (PPS _*numju- ~ *numgi-_ ’woman’: Nv, KCh).

|| Allothesis of the nasals in Kamchukchean and Yukaghiric.

[] The second part, following O. MUDRAK, is akin to PIE _*sweḱur-_ 'husband's father' [NIE 1021] / _*su̯ekrū́-_ 'Mutter des Ehemannes' [WP II: 521-522], [IEW: 1043-1044] < PN _*S_^{W}_Akʿ I (~ -qʿ-) ~ *Sakʿ_^{W}_I (~ -qʿ_^{W}_-)_ 'elder sister or older woman in the kin' [K-ENB] (IE, KCh).

|| Metathesis of labialization in Kamchukchean or in Indo-European?

A.9. PEAl _*Nəɣə-_ 'wind (cold or cool)' [CED: 224], [AD: 164] (PE _*Nəɣə-_ 'North': PYp _*Nəɣə-(ʁ)_, PIn _*nəɣə-, *nəɣɣə-ʁ-_ [ME 345] / _*nəɣəʀ_ 'wind (in Alaska from North)' (w/o Sir) [CED: 224]; PAl _*ɣi-ðɣi, *ɣi-lʁi-ðɣi-_ 'wind, breeze', _*ɣi-ðuɣ-sʁi-_ 'to start to blow' [AD: 164]).

←b PChk _*-əʒɣə-n_ 'wind; cool' [ЭСЧКЯ: 162] (_*əjɣə-n_), [MChk 273]. Notwithstanding M.FORTESCUE [LRABS: 136] (EAl, Chk), regarding these items as cognate, we are prone to accept O.MUDRAK's suggestion in considering the first item as a borrowing from the latter.

[] PIE _*eiġ-_ (PIH _*ei-_) / _*jeġ-_ 'ice-floe, icicle' [NIE 409] (+ Hitt _eka-_ 'ice?', _ekuna-, ikuna-_ 'cold' [TISCHLER: 103, 105]) / _*ieg-_ 'Eis' [WP I: 206], [IEW: 503], PFU _*jäkš3_ 'kühl, kalt; kühl, kalt werden / cool, cold; to get cool, cold' [FUV: 84], [SKES], [COLLINDER 1960: 64, 104, 169, 411], [UEW: 90], PFV _*jakša_ 'kühl, kalt; kühl, kalt werden' [UEW: 1253], PND _*ēq_ 'to cool down' [DEDR: N°875], [GSND 270], Al (Atk) _iku-na(-)χ_ 'cold, coldness' [AD: 190], PKCh _*[ʼъktъ]-jɣъ-_ 'wind' (litt. "strong wind") (PChk _*ɣiʒɣə-n, *-əʒɣə-n_ (in comp.), PKm _*kɨtiɣ_ 'wind, South wind') [ЭСЧКЯ: 162] (only Chk), [MK 977], [СКЛ: 112] < PN _*jekI_ 'ice' [ГДР: 5], [МССНЯ: 346] (_*jän/k/ʌ_ 'лед / ice': IE, PFU _*jäŋe_, Alt), [DN: N°2625] (_*yäka_ 'ice, cold': + Om), [SN 126] (_*jVkV_ 'ice, cold': IE, FU, ND), [K-ENB] (~ Al, Chk and KCh).

|| Cf. PChk _*iɣ(u)-_ 'cool; to cool down' [MChk 2176], which might be a borrowing from Aleutian.

A.10. PE _*nəʁca-_ 'game animal' (PYpS _*nəʁca-_ 'gray seal', PIn _*niqca-_) [ME 380] / _*nəʀcaʀ_ 'sea mammal?' [CED: 230].

←b Following O.MUDRAK [ME 380], this is a borrowing from PChk compound PChk _*ɨna-rɨš-_ 'to seek' of _*ɨna-_ intr. suff. and _*-rɨš-_ (with PKm _*nìsi̯_^{W}_-_ 'to hunt; capture, game: fish, bird' < PKCh _*ʼnɨš-_ 'to seek, to hunt' [MK 497], [СКЛ: 142]).

[] ?ϕ ?σ PIE _*wes-_ 'to eat (of animals)' [NIE 1463] / _*u̯es-_ 'schmausen; aufgeräumt sein' [WP I: 307-308], [IEW: 1171] (+ Hitt _wesi-_ c. 'Weide, Viehweide', _wesija-(wisija-)_ 'weiden', _westara-_ c. 'Hirt' [FRIEDRICH: 253]; Tokh A _wäsri_ 'grassy field, lawn', ? B _wasso_ 'kuśa-grass' [ADAMS: 585]), PFU _*wač3-_ 'jagen, treiben' [UEW: 549] < (?) PN _*ŋ_^{W}_Ać_^{W}_V ~ *wAńć_^{W}_V_ 'to capture; to eat (of animals)' [K-ENB] (? IE, FU, KCh).

A.11. PE _*nuli[ʁ]-_ 'to copulate; to give birth': PYpS _*nuliГ-_ 'to copulate; to give birth, to beget, to breed', PIn _*nuliɣ-, *nuliv-_ 'to copulate' [ME 414], _*nuliГaʁ_ 'wife, female mate': PYpS _*nuliГaʁ_, PIn _*nuliaʁ_ [ME 415] / _*nuliʀ(aʀ)_ 'woman; to copulate (with female)' (Sir _nuciχ, nucəχ_ 'wife', _nucəqəʁ-, nujəʁ-_ 'to give birth'), _[*nul(l)iʀ-]_ 'to copulate (with female)' [CED: 238-239]

←b The item is likely a loan from PChk _*nu-: *nu-ƛʁə-n_ 'bridegroom, fiancee' [ЭСЧКЯ: 189] (_*nuƛhə-n_), [MChk 1560] + PKCh _*-ƛhə-_ suff.

[] PIE _*new-_ 'new' [NIE 809] / _*neu̯os, -i̯os_ 'neu' [WP II: 324], [IEW: 769] (+ Hitt _newa-_ 'neu, frisch', _newahh-_ 'erneuern' [Friedrich: 150]), _*nū_ 'now' [NIE 819] / _*nū̆-_ 'nun', _*nū-no-_ 'jetzig' [WP II: 340], [IEW: 770] (+ Hitt _nu_ 'nun; und' [Friedrich: 152]), PFU _*nüke_ 'now' [SKES], PAlt _*nébì_ 'new' (PTrk _*jub-ga_ 'bastard, adopted son', PMng _*niɣu-n_ 'child, boy', PTM _*nebi_ 'new, fresh; younger (brother, sister); wife's brother's wife', PKor _*nə̄-_ 'younger relative (in compounds)', PJap _*nípí-_ 'new') [EDAL: 964] (cf. PTng _*nē_ 'at once, today' [ССТМЯ 1: 614]), PKm _*ŋewek_ 'daughter' [СКЛ: 146], PNv _*nav-_ 'now, recently; afterwards' [MNv 2020] < PN _*nu_ 'now', _*newi_ 'new; newborn' [Starostin 1991: 147-148] (IE, A), [DN: N°1573] (_*nEw(y)V_ 'new'), [DN: N°1537] (_*nǖ?(E) ~ *nǖw(E)_ 'now'), [DN: N°1541] (_*nǖkV_ 'now'), [SN 572] (_*nVwV_ 'now; new': IE, FU, Alt), [K-ENB] (~ GZ, E, KCh and (?) Km), [MNv 2020] (~ TM, Nv, KCh).

|| Partial reduplication (with further dissimilation) in PGZ _*ninw-el-_ 'boy, lad, adolescent' [Sardžveladze 1991: 142-143], [EDKL: 143], PYk _*mi(N)-(ʒərpə-), *ni(N)-_ 'new (neutral); fresh (of food)' [MYk 1326] / _*minč'ərpə-_ 'new; fresh' [HDY: N°1233] (also sub [HDY: N°1456]), PKCh _*ŋin-_ 'new-born, young' (PChk _*ŋin-_, PKm _*ŋin-_ 'new-born; teenager; shoot) [ЭСЧКЯ: 104], [MK 64], [СКЛ: 148] (+ PChk _*nɨm (-ʁɨ)_ 'again' [ЭСЧКЯ: 189], [MChk 884] and PKm _*nèn'ъ̣, *nèŋ-'u_ 'now, immediately; new' [MKm 1392], [СКЛ: 140], [MK 64]) < PN _*ninwI (~ -ŋ^{W}-)_ 'new-born, young' [MPS 1083] (PPS 'new, young': Yk, KCh), [K-ENB] (~ K), as well as some other words for child.

A.12. PYpS _*navəʁ-_ 'to ask for a loan, borrow, exchange' [MYp 1240] / _*navəʀ(aʀ)-_ 'to borrow or exchange' (Sir _javəʁətə-_) [CED: 221].

|| Notwithstanding M.Fortescue [LRABS: 136] (E, Chk), regarding Eskimo and Chukchean items as cognates, the Eskimo word is likely borrowed from PChk _*ʒaba-_ 'to use' [ЭСЧКЯ: 175] (_*java-_), [MChk 574].

[] ?σ PIE _*(o)jebh-_ 'futuere' [NIE 1365] / _*eibh-_ (: _*oibh-_), _*i̯ebh-_ 'futuere' [WP I: 198], [IEW: 298], PAlt _*ebí_ 'to be weak, to wither' (PTM _*ebe-_ 'weak; to yield, be submitted; foolish, obstinate; lax, tarrying', PKor _*ə̀bí-_ 'to be exhausted, hungry; to lack, be insufficient', PJap _*i(m)pu-sia-_ 'in bad spirits, bad-mooded') [EDAL: 490] < PN _*jebV_ 'to use; to spoil' [K-ENB] (? IE, Alt, Chk).

A.13. PE **l[u]ɣLu-ʁ-* 'loop': PYp **Nu/əɣru-, *əNɣuʁlu-* 'loop; ring' (Sir *nuɣru* < Chpl), PIn **luʁlu* 'loop, noose' (*l- being preserved in SPI *luʁluq*) [ME 349] / **nəɣuʀluʀ* 'loop' [CED: 224].
←b PChk **luq-luq " (~ -u-)* 'noose, snare, a laid loop 1, trap (wooden?) 2' (Chk *lʔuw-lʔuw "* 1, *u-lukkɛ-n* 2) (with PKm **'leqəl* 'loop' < PKCh **luqəl* 'loop; trap' [MK 1063]). Notwithstanding the authors of [CED], no link with PE **nəɣuR-* 'avoid or go around' [CED: 224] / **Nəɣu-ʁ-* 'to move around; to avoid': PYp **Nəɣu-ʁ-* id., PIn **niɣuʁ-* 'to escape, to try to get away from' [ME 348].
[] Saam *luk'kâ* 'buttonhole' (< ? PUr **rukV* id.), PYk **nono-l* 'loop; noose, snare' (assimil. and redupl.?) [MYk 120] / **nono-* 'loop; snare; trap for birds, hares, bears, elk and wild reindeer' [ПУЮГС: 313], [HDY: N°1504], PNv **lu-* 'weave, wattle; bind, tie up' [MNv 1870] < PN **lu[ɣ]V* 'loop; noose' [MPS 507] (PPS 'to plait'). Cf. ?σ PIE **lū-* 'to untie, to set free, to separate' [NIE 2338] / [WP II: 407-408] (+ Tokh A, B *lu-* 'send' [Adams: 555]).

A.14. PYpS **jajwalə* 'orphan': Sir *jajwála*, Chpl *jajwāla (ət), jejváli*, Nauk *jəjwēlə* [MYp 600].
←b Following O.Mudrak [MYp 600], the item is borrowed from Chk *jɛ́jwɛɫ* 'orphan' < PChk **ʒeʒfeɫ* 'orphan; pity; pitiful; unfortunately; to have pity, feel compassion' (with PKm **le'ĕlu-/ *se'elu-* 'hapless, miserable' < PKCh **jejvelə (~ l-)* 'hapless, miserable' [ЭСЧКЯ: 59], [MK 378]).
[] ? PK **qw-* 'to select, to eliminate' [EWK: 563-564], PIE **ewan-, *wān-* 'empty' [NIE 1186] / [WP I: 108-109], PAlt **i̇ubu* 'to be hungry, exhausted' (PMng **öje-* 'to be hungry, voracious', PTM **(x)ob-* 'to become spoiled (of meat); to get tired, exhausted; to get poor', PKor **ɨ̄b-, *i̇bur-* 'to wither, dry up, decline, decay', PJap **u̇wa-* 'to be hungry') [EDAL: 609], PDr **āval-* 'trouble, suffering' [DEDR: N°265], [GSD 113] < PN **qAjwV (~ *q^{W}iwV ?)* 'to be hungry, deficient' [DN: N°1899] (**qäw[h]V* 'lack, be empty/incomplete': K, IE + Sem), [SN 1160] (**HVwV* 'to be hungry, deficient': ? GZ, IE, Alt), [K-ENB] (~ ? KCh).
|| PKCh **jejve-lə* assimil. < **hejve-lə* or dissimil. < **ɣ^{W}ive-lə*? The reconstruction is highly hypothetical.

A.15. PE **kamlu* 'tube, tube-like mounting': PYp **kamlu*, PIn **kavlu* [ME 27] / **kamlu* '(rounded) cap or mounting (?)' [CED: 155].
←b Notwithstanding M.Fortescue [LRABS: 134], this is likely a cultural loanword from PChk **kạmlịl* 'circle' (with PKm **k^{W}me-* 'ring' < PKCh **kĕmə-* 'circle, ring' [ЭСЧКЯ: 178] (only Chk), [MK 993]), adapted to a common suffix PE **-lu(ʀ)* 'place or thing (for performing action)' [CED: 408]. The possibility of borrowing is noted by O.Mudrak [ME 27].

[] PIE **g(ᵂ)Am-(Vl-)* 'swelling (bump, lump)' [NIE 316] (diff. [WP I: 572 sqq.], [IEW: 368-369]), PAlt **kʽi̯omo(lV)* 'a k. of fragrant and edible plant [esp. onion or garlic]' (PTrk **Kumlak* 'hop', PMng **kömeli* 'a k. of wild onion or garlic', PTM **ximŋe-kte* 'bird-cherry', PJap **kamira* 'a k. of garlic') [EDAL: 805], PDr **gum-* 'knob, boss, hump' [DEDR: Nº1743], [GSD 405], PEAl **kumkə-* 'lump' [ER: 118] (**kukmc-* 'chunk, lump'), [CED: 181], [AD: 247] (PE **kumkə-* 'to have food between teeth': PYp **kumkə-*, PIn **kupki-* [ME 145] / **kumkaR* 'food caught between teeth', **kumka(C)ili-* 'pick teeth' [CED: 181-182]; Al (Atk) *kukmi-χ* 'chunk, lump' (< **kumki-*) [AD: 247]) < PN **gᵂemV (-ɣV, -lV)* 'lump, ball, tuber' [K-ENB] (IE, Alt, Dr, EAl, Chk).
|| Cf. sub **A.17**.

A.16. PE **kə'mali-* 'woman's knife': PYpS **kəmali-* (Sir *kəmə́səχ*, [Em.] *kəməsiχ*), PIn **kimali-* 'woman's knife (small sewing ulu-type knife)' [ME 84] / **kəmaliʀ* '(woman's) sewing knife' [CED: 168].
←b PChk ***keɣə-nmə-lŋən* 'hand', cf. **keɣə(t)-(mən-), *keɣ-ril-* 'hand; palm; wrist; fist' (with PKm **x̯ik'ế'-č́u̯ ~ *x̯ik'ī́'-č́u̯* 'hand' < PKCh **kėɣə-t* 'hand' [MK 209], [СКЛ: 220]); cf. Sir *kāmənjərʔa* 'handful' < Chk *keɣenmə-jərhə-n* id.
[] ?σ PAlt **kʽi̯oge* 'poles in frame' (PTrk **kegej* 'spoke', PMng **keɣɛ-sün* 'wheel spoke', PTM **xuge* 'frame, poles round the hearth; board on edge of bed; first lower log in house, threshold') [EDAL: 802-803] < PN **kʽᵂegl (~ qʽᵂ-)* 'branch; pole' [K-ENB] (Alt, KCh). The etymology remains highly hypothetical, though plausible in view of a probable semantic shift 'branch' > 'arm; hand'.

A.17. PE **kəmaɣ-luɣ* 'tuber': PYp **kəmaɣ-luɣ*, PIn **kImaɣ-luɣ* [ME 82] / **kəmaɣluɣ* 'tuber' [CED: 168].
←b O.Mudrak suggests the borrowing of Eskimo item from PChk **kəmʁu-* 'to roll os. up into a ball; ball, roll, (edible) tuber; round (of a ball)' [ЭСЧКЯ: 180], [MChk 640], a derivative from **t-kъm, *kъm "*'to roll os. up into a roll; roll, lump' [ЭСЧКЯ: 209] (contaminated with PChk **kъmʁъ-ɣbъ-* 'stone, pebble, a round stone (polished by sea)').
[] ?ϕ PK **qom-* 'excrescence' (Grg (Tush) *qom-* 'Auswuchs, Ueberbein'; Sv *qwem* 'penis', *qem / qom* 'Endstück') [EWK: 566], PIE **kam-* 'lump, clod, bundle' [NIE 1515] / sub **kem-* 'zusammendrücken, -pressen, hindern', **komo-* 'Eingeengtes' [WP I: 388-389], [IEW: 555] < PN **[qʽ]AmV* 'lump, sth. round' [LRABS: 134] (E, KCh), [K-ENB] (~ ? K, IE).
|| This root is very similar to that sub **A.15**, thus it is difficult to sort them out.

A.18. PYp **kəɣlunəʁ (~ *kənluΓV)* 'wolf' [MYp 556] / **kəɣlunəq* 'wolf' [CED: 166].
< (deformed from) **əlɣunəʁ*
←b from PKm **lhъ̀jɣunė {*hiɣunė (*lh-, -ъ̀j-)}* 'wolf' (with PChk **lʁiɣ-nə* id. < PKCh **lħiɣunə* 'wolf' [ЭСЧКЯ: 81-82], [MK 400]), on account of a tabooistic contamination with **kəɣə-* 'to bite' [ME 66], [CED: 164] and metathesis *-lɣ- > *-ɣl-. Sir *qənləʁa* 'wolf' (foll. O.Mudrak, < *⁺qəʁlə́na* ?; PYpS ***kənluΓV* hardly existed) appears from a further contamination with PE **qənʁa- (~ *qiHənʁa- ?)* 'fox, polar fox': PYp **qənʁa-ʁ- ~ *q[i]ʁna-ʁ-* + Sir *qinaχtəqə̄́χtəχ* 'to bark', PIn **qianʁa-ʁ-, *qiʁnəʁa-* [ME 537] / sub [CED: 166, 308, 307]. AAY *kaɣanaq* 'wolf' sub [ME 866], with PYpS **kaɣa-* 'unruly, disheveled (hair); to fall out (hair from skin taken from animal)' (with PIn **kaa(ŋ)-* 'loosened from sth. (hair from skin, ice from beach)' < PE **kaɣa-* 'to fall out (hair); disheveled' [ME 11] / **kaɣa-* 'come loose or strip' [CED: 151]) presents another tabooistic deformation.
|| PAl **alɨ̄ʁi-, *alɨ̄ʁŋi-* 'wolf (on Alaska Peninsula and Unimak Island)' [AD: 54] is rather borrowed from the afore-mentioned Chukchean source (**lʁiɣnə*), contaminated with PAl **aliʁ(-)* 'old man (over sixty years old); pl. elders', 'to be old (of man)', 'adult male of animal or bird; pl. crew; king in chess' [AD: 54].
[] For PKCh **lhъ̀jɣunə*, cf. PIE **wʳlk-o-* 'wolf' [NIE 1252] / **u̯l̥kᵘos* 'Wolf' [WP I: 316-317], [IEW: 1178-1178] < PN **wIlkʿV (~ -qʿ-)* 'wolf' [Bengtson 1989: 37] (IE, KCh), [K-E 2008: Nº2.5] (~ YpS).
[] For PE **qənʁa- (~ *qiHənʁa- ?)* 'fox, polar fox, wolf' [ME 537] / PIn **qianRaqtuq* '(blue or cross?) fox' [CED: 301], cf. PIE **k̇uwen- (*k̇un-)* 'dog' [NIE 526] / **k̇uon-, *k̇un-* 'Hund' (ursprüngl. Nom. Sg. **k̇uuō(n)*, Gen. **k̇unos*) [WP I: 465-466], [IEW: 632-633], PFP **küjnä* 'wolf' [Wichmann 1901: 68; 1915: 20] < PN **kʿujnV (~ qʿ-)* 'wolf, dog' [МССНЯ: 334] (IE, FP + ? AA), [ОСНЯ 1: Nº238] (IE, FP, ?? Alt + AA), [DN: Nº1083] (IE, FU + AA), [SN 63] (IE, FP, ?? Alt), [ME 537], [K-E 2008: Nº2.9] (~ E). Several Inupiaq forms have contaminated with PE *[*qiRnəRtu(q)]* 'blue fox' / sub **qiRnəR-* 'be black or dark' [CED: 308], and ECI *qiiʁattuq* 'silver fox', with PE **qirəʁ, *qirʁəʁ* 'grey hair': PYpS **qirəʁ, *qiʁrəʁ*, PIn **qirəʁ, *qirʁə(ʁ)* [ME 720] / **qiðəR* 'grey hair' [CED: 301-302].
|| Also possible is the linkage to PIE **(s)kan- / -e-* 'puppy, cub' [WP I: 465-466] (diff. in [IEW: 563-564]), [NIE 527], PAlt **káŋV* 'dog' (PTrk **KAŋ-čɨk* 'bitch, female', PTM **kači-kān* 'puppy' (< **kaŋ-čikān* ?), PKor **kàŋ-* 'dog; puppy', MKor *kàŋ'àčí*) [EDAL: 645] < PN **kan(H)V* 'bitch, puppy' sub [SN 63].

A.19. PYpS **kilɣa-* 'running; to go wild' [MYp 570], **kəliɣə, *kəliɣə* 'land, ashore, wilderness' [MYp 839] / **kilɣaq* 'tundra, wilderness' [CED: 174].
←b Both items are loans from PChk **ʁəlʁə-* 'tundra' (with PKm **quɫh* id. < PKCh

**həlhə* ’tundra’ [ЭСЧКЯ: 49], [MK 534]), though according to O.MUDRAK the first item would be borrowed from Kamchatkan.

[] M.FORTESCUE [LRABS: 137, 174] (Ur, Yp, It) presumes the linkage to PUr **k[ä]łV* ’(swampy) lake, bay’ [FUV: 21-22] / **käl3* ’(versumpfter) See, Bucht’ [UEW: 134] / **käłV* ~ **küłV* ’bay, swampy lake’ [ОСНЯ 1: N°177] (+ Slk), akin to PIE **g^{w}ela-* ’to boil over’ [NIE 1768] / **g^{w}el-*, **g^{w}elə-*, **g^{w}lē-* a) ‘herabträufeln, überrinnen, quellen’ [WP I: 690 sqq.], [IEW: 471-472] (+ Hitt *kweluwana- (kuluwana-)* c. ’Waschbecken’ [TISCHLER: 604]), PAlt **k‘ṓli* ’lake, basin’ (PTrk **[k]ȫl* ’lake’, PMng **köjil-sü* ’island in a river, shallow place in a river’, PTM **xule-* ’canal, ditch, duct; whirlpool; pool’, PKor **kȧram* ’lake, big river’, cf. OKog **kuȧl* ’river’ [MILLER 1979: 8]) [EDAL: 834-835], PDr **kUl-* ’pond, lake’ [DEDR: N°1828], [GSD 716], ?ф PYk **jalɣi-* O ’lake’ [MYk 885], **jalq-* ’lake; ...’ [ПУЮГС: 181], PKCh **ɣoƛɣ^{w}o* ’lake’ (PChk **ɣъtɣъ-n*, PKm **k^{w}ъ̀lx^{w}u*) [ЭСЧКЯ: 41] (**ɣъsɣ^{w}ъ*), [MK 510], [СКЛ: 94] < PN **g^{w}VlHV* ’spring (of water), lake, pool’ [МССНЯ: 352] (**/ḳ/oɫʌ* ’озеро / lake’: ? Ur, Alt, Dr + AA), [ОСНЯ 1: N°177] (**küłä* ’озеро, небольшой водоем / lake, small reservoir’: ? IE, Ur, Alt, Dr + AA), [DN: N°878a] (**kUl̇V* ’to flow, gush, leak’: IE, diff. and quest. Ur, part of Dr + ? Msg), [DN: N°1035] (**KüHlä ~ *KülHä* ’lake, small body of water’: Ur, Alt + AA), [DN: N°1045] (POU **kǖlɣV, *kɨ̄lɣV* ’swamp’, incorr. Trk + dub. Sem), [SN 246] (’pond’: IE, Ur, Alt, Dr), [MPS 217] (PPS ’lake, reach’), [K-ENB] (~ EAl, KCh), which looks semantically questionable presupposing the development ’spring (of water)’ > ’marsh’ > ’swampy soil’ > ’wilderness’.

// The linkage to PAlt **ȧgula* ’uninhabitated place, wilderness’ (PTrk **aglak* ’lonely, uninhabited (place); unemployed, out of work; field’, PMng **aɣula* ’mountain’, PTM **agulān* ’meadow, plain’) [EDAL: 276-277], wich is a deriv. from PAlt **agi* (PTM **agɨ̄-* ’to walk without a road; wilderness’, PTrk **āgɨl* ’settlement’ (*’nomadic settlement’), WMng *ajimak* ’a group of ajil’s’), which is cognate with PIE **awəl-* ’court, street’ (Arm *ul, uɫi* ’road’, Gr *αυэλή* f. ’outer or inner yard, dwelling’, *αυ□λιον* n. ’hutt, enclosure, grotto’, *αυэ̃λιφ, -ιδοφ*, acc. *-ιν* f. ’shelter for the night (in open space)’, PSl **ū́lɨ̄cā* ’square, street, passage’) [NIE 2820] (diff. in [WP] and [IEW]) < PN **Haɣu/i (-lV)* ’to roam, wander; wilderness’ [SN 1185] (**aHulV* ’settlement’: IE, Alt), looks semantically perfect, but brings up phonetic and morphologic problems, suggesting a development PKCh **həlhə* < **əhi-lhə* or sim.

|| A different and dubious Eskaleutian match for Uralic item in [LRABS: 140].

A.20. PE **kujŋə* ’tobacco-pipe’: PYpS **kujŋə*, cf. Sir *kujŋúxłəχ* ’dripping-pan’ PIn **kuiŋi-* ’pipe; to smoke tobacco’ [ME 136] / **kuiŋiq* ’pipe’ [CED: 180].

←b Chk *kȯjŋən* id., first ’mug, cup’ (< PChk **koʒŋъ-n* ’mug, cup’ [ЭСЧКЯ: 182] (**kojŋъ-n*)). Citations Chpl *kojŋa*, instead of more ancient *kujŋa*, and Nauk *kȯjŋə* reflect Chukchee *-o-*.

[] PFP **kíná̈ (*küná̈)* ’rinnen-, röhrenförmiges Gefäß’ [UEW: 664], PAlt **k‘ōni* ’ladle’ (PTrk **kȫjnek* ’bucket, vessel’, PMng **kunija* ’dish made of birch’, PTM **xuńa-* ’ladle;

thimble; finger; wooden bucket', PKor **kùńí* 'manger, trough', PJap **kúm-* 'to scoop', cf. Mng *konak* 'gutter', Kor *konägi* 'tall jar') [EDAL: 838-839] < PN **k'u[jn]V* 'a k. of vessel' [DN: N°1082] (**Ḳuyn̄V* 'bucket, basket': FP, Alt + dub. Sem), [SN 1385] (**ḳUńV* 'vessel, laddle': FP, Alt), [K-ENB] (~ Chk).
|| Dissimilation *-jń- > *-jŋ- in Chukchean?

A.21. PYp **kuɣim-Ra-* 'to swim, wave' (< PE **kuɣim-Ra-*) [ME 705] / **ku(C)imə-* 'swim' [CED: 180].
|| Notwithstanding the authors of [CED], hardly linked to **kuvə-* 'pour or spill' [CED: 183], or to **kuðəɣ* 'river' [CED: 179].
←b PChk **ɣiɣi-b- ~ *ɣ*^{W}*ɨɣ*^{W}*ɨ-b-* 'to float adrift' (with PKm **ɣ*^{W}*i-, *t-wi- (~ *x*^{W}*-)* 'to swim' < PKCh **ɣ*^{W}*evə-* 'to swim' [MK 314], sub [СКЛ: 69]).
[] PUr **woje-* 'to swim' [FUV: 64] / **uje- ~ *oje-* 'schwimmen' [UEW: 542] / **uxɨ-* 'swim' [SW: 122], [HPUL: 536], PAlt **oje* 'to swim' (PMng **üji- / *oji-mu-* 'to sink, to put in in a pot for boiling; to swim', PTM **ujV-* 'to swim (of birds)', PJap **əjənk- (*əjuank-)* 'to swim') [EDAL: 1043], PNDr **ōg-* 'to swim, float' (< PDr **ōg- (*ō-ŋ-)*) [DEDR: N°1031], [GSD 1131] < PN **ɣ*^{W}*ojV (-NɣV)* 'to swim' [Rasanen: 42], [FUV: 147], [ГДР: 10], [МССНЯ: 355] (**wojʌ* 'плыть / to swim': Ur, Alt), [DN: N°2614] (**XoɣV* 'to swim, float, flow': Ur, Alt, NDr + Eg), [SN 448] (**HojV* 'to swim': Ur, Alt, Dr), [K-ENB] (~ KCh). Cf. PKCh **k*^{W}*e-(j)* 'river' (PChk **ɣe-ʒem*, PKm **kiɣ*^{W}*ɪ*) [MK 306], [ЭСЧКЯ: 77] (**k*^{W}*ejə-m* 'river'), [СКЛ: 100-101].
|| Despite O.Mudrak, we do not deem it necessary to validate the additional correspondence PE **-ɣ-* ~ PA **-j-*.

A.22. PE **quləmci-unt* 'kettle, pot': PYp **quləmci-unt*, PIn **qulipci-unt* [ME 996] / **quləmciʀun* 'cooking pot' [CED: 314].
←b O.Mudrak [ME 996] suggests a borrowing from PChk compound **qulʁə-mɬə* 'kettle, pot' (**qulʁə-* + **-imɬə*, litt. "trough=water"). The first component with PKm **qɬho-č (~ k-, -x-)* 'baidara' < PKCh **qŭlhə-* 'baidara, trough' [MK 922], cf. PChk **qul(ʁ)əqət- (~ u)* 'bucket' (Chk *quləqət(a)*) [MChk 1803]; cf. also PChk **kuci- (~ u)* 'spoon' [ЭСЧКЯ: 182] (**kuci-neŋ(c)*), [MChk 593] (if < PKCh **kuƛ̓'ə-*). The second, PChk **m-imɬə-, *-imɬə*, with PKm **'imɬ-* < PKCh **'imɬə-* 'liquid, water' [ЭСЧКЯ: 55] (**'iməɬ-*), [MK 655]).
[] PIE **kalVk̇-, *kulik̇- (~ -ġ-)* 'a k. of vessel' [NIE 4218, 577] / **kel-* (**kol-, *k*$_{o}$*l-*) (mit *k̂*-Suffix) 'Becher' [WP I: 442], [IEW: 550-551], **kalp-* 'a k. of vessel' [NIE 431] / **kelp-, *kl̥p-* 'Krug, Topf' [WP I: 447], [IEW: 555], PDr **kal-* 'vessel, ship, boat' [DEDR: N°1305], [GSD 486], PEAl **kaləv-* 'to sink; dipper, scoop' [ME 22] (PE **kaləv-* 'to sink; to get stuck': PYp **kaləv-* 'to sink, to go down; to put into water, mud, to dip; to be stranded', PIn **kalivi-t-* 'to get stuck or stranded' [ME 22] / **kaləvə(t)-* 'sink into mud (or water or snow)' [CED: 154]; PAl **kaluka-* 'dish, plate (wooden),

bowl, cup' [AD: 225]) < PN _*kʿAlV (~ qʿ-, -lV) (-k(ʿ)/q(ʿ)V, -p(ʿ)V)_ 'to sink; dipper, scoop' [ОСНЯ 1: Nº154] (? _*kala_ 'vessel': Tng, Dr + AA), [SN 629] (_*kalV_ 'vessel': ? PIE _*kalp-_, PAlt _*kaĺpa_, Dr), [K-ENB] (both IE, Dr, EAl, Chk). Eskimo item preserves the archaic verbal pattern.

|| Maybe a different root (or phonemic variant?) in PE _*qaluv-_ 'dipper, ladle, scoop-net' (PYpS _*qalu(v)-_, PIn _*qalu(-), *qallunt, *qaluunt_) [ME 851] / _*qalu(-)_ 'dip or scoop', _*qallun_ 'dipper', PIn _*qalutaq-_ 'ladle or bail' [CED: 280], PE _*qalta-_ 'bucket, can, pail' (PYp _*qalta-_, PIn _*qatta-_) [ME 849] / _*qaltaR_ 'bucket' [CED: 280] (_*-taR_ pb. 'sth. pertaining to sth.' [CED: 426]), PAlt _*kaĺpa_ 'a k. of vessel' (PTrk _*KAluk / *KAlgak_ 'spoon; oar, shovel', PMng _*kalbuga_ 'spoon, ladle, oar', PTM _*kala-n_ 'kettle; bag', PJap _*kasipa_ 'vessel', cf. MKor _kari_ 'fish pot, basket for catching fish', OJap _ke_ (PJap _*ka-i_) 'vessel, container': two roots?) [EDAL: 638-639] < PN _*k(_^{W}_)aĺV (-pV)_ 'to dig, dip, scoop' [ПУЮГС: 80], [HDY: Nº2051] (Yk, TM), [K-ENB] (A, EAl + Nv, KCh), PYk _*qola:_ 'iron, ladle, scoop' [ПУЮГС: 80], [HDY: Nº2051], PNv _*qo_ 'water vessel' [MNv 925], PKCh _*q_^{W}_ъḷpa- (~ k_^{W}_-)_ 'shovel, spoon' (PChk _*ɣ̓ъlpa_, PKm _*k_^{W}_i̯č́i̯pə-č~~ *či̯ki̯pə-č (~ *qi̯č́i̯pə-č)_) [ЭСЧКЯ: 151] (_*vъl'pa-_), [MK 346].

|| PYpS _*kaluka-_ 'dipper, scoop, cask, barrel, can, bucket' [MYp 1943] / _*kalukaq_ 'basket, cask, casket, wooden bowl' [CED: 154], according to above-mentioned sources, is rather borrowed to Eskimo from Aleutian, than vice versa.

[] PAlt _*umV (~ o-)_ 'to drink' (PMng _*umda_ 'thirst, to be thirsty; a drink', PTM _*um(i)-_ 'to drink', PKor _*mà-_ 'to drink') [EDAL: 1499-1500], PDr _*mɨ̄-_ 'to wash' [DEDR: Nº4878], [GSD 868], PE _*əmi-c-_ 'to soak, drench, give a drink': PYpS _*əmic-_ 'to drench, wet, soak', PIn _*immit/c-_ 'to soak, have filled with water, give so. sth. to drink' [ME 1327] / PE _*əmmit-_ 'provide with water' [CED: 110] (+ Sir _imə́siχtə́qəχtə̄́ʁa_ 'to drench', _iməsəʁ-_ 'to fill with water' [Vakh., Orr] sub PE _*immiR-_ 'fill with water' [CED: 131]) (cf. PE _*ima(ŋ)-_ 'pus': PYp _*ima(ŋə)-_, PIn _*imaʁu/ia-, *immaɣ-_ [ME 655] / _*imaRyaɣ_ 'bodily fluid or pus' [CED: 131]) < PN _*HomV_ 'water; to drink' [MK 16] (~ KCh), [K-ENB] (~ E). Any relation to PIE _*ab-, *amb-_ 'a k. of vessel' [NIE 3090] and _*ambhor-_ 'tub, bucket' [NIE 2081] / [WP II: 153-154].

|| The latter might represent a different root from PIE _*mū-_ 'to wash; wet' [NIE 2884] / _*meu-, *meu̯ə- : *mū̆-_ ʽfeucht, moderig, netzen, unreine Flüssigkeit (auch Harn), beschmutzen' [WP II: 249 sqq.], [IEW: 741-743], ?σ PFU _*mäɣV ~ *mäwV_ 'honey' [HRC] / _*mäk3_ 'Honig' [UEW: 266],Cf. PIE _*(s)mū-_ ʽto soil' [NIE 743] / sub ibid. (auch ʽwaschen, reinigen') [WP II: 249 sqq.], [IEW: 741-743] (cf. also PIE _*m[e]j-_ 'to soil' [NIE 739] / _*mai-_ (_*moi-_?) ʽbeflecken, beschmutzen'? [WP II: 243], [IEW: 697]), PYk _*moji-_ 'to mix; to shake up (water), mix up; to knead; to turn up (stomach); to rummage' [MYk 844], PKCh _*'əmɣə'-m_ "'wave' (PChk _*əmɣu-, *məɣ_ " ~ _*məɣ̈_ ", PKm _*mɣ̀u-mɣ_^{W}_u-m_) [ЭСЧКЯ: 94] (_*mъɣ_), [MK 16] < PN _*muɣV ~ *miɣ_^{W}_V_ 'liquid; to wash; to soil' [ГДР: 1], [МССНЯ: 334] (_*mʌwʌ_ 'вода / water': IE, incorr. Tng + AA), [ОСНЯ 2: Nº298] (_*mEwʌ_ 'вода, влага / water, moisture': IE, incorr. Tng + AA), [DN: Nº1382] (_*muhi (~ *mAwhi, *muhyV)_ 'water, liquid': IE, Dr, incorr. Tng), [IENH: Nº521] (_*ma/əw-_ 'water, liquid, fluid': IE + AA), [SN 60] (_*mEwV_ 'water; wet': IE, Dr), [MPS

719] (PPS ’to mix, shake up, to turn up (stomach); wave’: Yk, KCh, ?σ PNv _*maʁ_ ’sand’ [MNv 1929]), [ME 566] (~ ? FU, Alt, E), [K-ENB] (~ IE).

A.23. PE _*qurŋi-_ ’domesticated reindeer’: PYpS _*qurŋi-_ (Sir also _qurəłəχ_), PIn _*qunŋi-_ [ME 1029] / _*qujŋiq ~ *qužŋiq_ ’domesticated reindeer’ [CED: 322].
←b PChk _*qora-ŋa_ ''’domesticated reindeer; heifer (in comp.)’ (with a typical singulative suff.), with PKm _*qoz_ ’deer’ < PKCh _*qorə-_ ’domesticated reindeer’ [MUDRAK 2000: 120].
[] PIE _*ĝ^{W}hēr-_ ’wild beast’ [NIE 399] / _*ĝhu̯ēr-_ ‘wildes Tier’ [WP I: 642-643], [IEW: 493], [BUCK: 137], PUr _*koj(e)-ra_ ’Männchen / male’ [UEW: 168], PAlt _*gúr($_{1}$)i (~ -o-, -ŕ-, -e) (-nV-)_ ’deer, game’ (PMng _*görüɣe-_ ’antelope, wild steppe animal, game’, PTM _*gurma- / *gurna-_ ’hare; squirrel; ermine’, PKor _*kòráńi_ ’deer, reindeer, elk’) [EDAL: 574-575], PDr _*gor̠-_ ’deer’ [DEDR: N°2165], [GSD 391] (cf. _*kur-_ ’antelope, deer’ [DEDR: N°1785], [GSD 691]) < PN _*gujr($_{1}$)I (-ŋV)_ ’wild beast, deer, game’ [I-S 1968: 6.1], [МССНЯ: 330] (_*gojrʌ_ ’антилопа / antelope’: IE, Ur, Alt, Dr + AA), [ОСНЯ 1: N°90] (_*gurHa_ ’антилопа, самец антилопы / antelope, male of antelope’: Alt, Dr + AA), [ОСНЯ 1: N°93] (_*gUjRä_ ’дикий (зверь) / wild (beast)’: IE, Alt), [DN: N°663] (_*guyrE_ ’beast’: IE, Alt), [DN: N°672] (_*gurHa_ ’antelope’: Alt, Dr + AA), [SN 1] (_*gujrV_ ’antelope’: IE, Ur, Alt, Dr), [K-ENB] (~ Yk, KCh).
|| There is still controversary between the nostraticists, A. DOLGOPOLSKY and V. ILLICH-SVITYCH on one hand, separating the roots meaning ’wild beast’ and ’deer, antelope’, and S. STAROSTIN and other Muscovites on the other, uniting them.

A.24. PE _*ququʀ-_ ’to call’ [CED: 319] / _*ququra-ʁ-, *ququ-ʁ-_ ’to call, beckon’: PYp _*ququ(r)a-ʁ-, *ququ-ʁ-_, PIn _*ququa-ʁ-, *ququ-ʁ-_ [ME 1019]
|| Notwithstanding M.FORTESCUE [LRABS: 134] (E, Chk), Eskimo item is hardly cognate with PChk _*quq-_ ’to call’ (_*qoqLa-_ ’howling; to howl, halloo’ [MChk 2063]), but, according to O.MUDRAK, is rather a borrowing from the latter. O.MUDRAK points also to a parallelly borrowed PE _*ququ-Γ- ~ *quqlu-Γ- [*quqRa-tku-]_ ’giant polar bear (legendary)’: PYp _*quqjatku_, PIn _*quqqu(ʁ)-ja-ʁ, *quɣluΓ-ja-ʁ_ [ME 1018], from PChk _*qoqLa-cku-_: Chuk _qocatko_ ’k. of giant bear who beckons people for the purpose of devouring them (myth.)’ [Bogoraz], that is a deverbative of the durative stem of the verb.
[] PIE _*kAuk^{W}-_ ’to shout’ [NIE 1477] (+ Tokh B _kuk-_ ’call out, shout’ [ADAMS: 180]) < PN _*kʿukʿu (~ qʿ)_ ’to call, shout’ [K-ENB] (IE, Chk).
|| The root attests an expansion (reduplication?) of PGZ _*q̇iw-_ ’to cry (of cock), shout’ [ЭСКЯ: 212], [EWK: 415-416], PIE _*kewə-_ ’to shout’ [NIE 1476] / zu _*kăŭ-, *kĕŭ-, *kū-_ ‘heulen’, _*kau̯ā-_ ‘schreinder Vogel’; Schallwurzel, teils mit anlaut. _k_, teils mit _k̂_ [WP I: 331-332], [IEW: 535-536], PA _*kʿiube_ ’voice, sound’ (PTrk _*kü(b)_ ’fame;

wisdom; famous', PMng **küw-* 'to talk, converse; conversation', PTM **xǖ- (*xüb-)* 'to sound', PKor **kubɨi-* 'to celebrate, glorify', PJap **kə̀wài* 'voice') [EDAL: 812], PD **kav- (*k̇-)* 'to curse; scandal' [DEDR: N°1341], [GSD 539], **kū-* 'to call' [DEDR: N°1868], [GSD 708], PKCh **'əɣʷu-* 'to howl' (PChk **ɣu " (~ ụ)* 'oh! to howl', PKm **ɣʷula-* 'to howl (dogs)') [MK 1047] < PN **q'uwI* 'to shout; sound' [DN: N°967] (**kawV* 'to call, shout': PIE **gow-* 'to shout', Dr), [DN: N°1947] (**q̇uwi[ʕ]V* 'to shout, cry': GZ, PDr **kū-*), [SN 1417] (**ḳVwV* 'to shout; sound': GZ, IE, Alt, Dr), [K-ENB] (~ Chk).

A.25. PE **avəɫŋa-ʁ (~ *avɫəŋa-)* 'mouse, lemming': PYp **ávcə(ɫ)ŋa- ~ *avəɫŋa-* 'mouse', PIn **avənŋaʁ* 'lemming' [ME 1742] / **avəlŋaʀ* 'lemming' [CED: 56] ←b through PKCh **ɣʷilħə* < PKCh **'jilħə "* 'mouse, [arctic ground] squirrel' (PChk **ʒilʁe "*, PKm **l'il'e- (l?)*) [ЭСЧКЯ: 176] (only Chk), [MK 861] (also in PChk **ʒɨlʁa-šɣъ-n* 'blue-bellied fox', lit. "fur like a ground squirrel's" [ЭСЧКЯ: 177], [MChk 504]).

[] PAlt **álikV* 'a k. of small animal' (PTrk **Ắlaŋɨr* 'a k. of rat, jerboa', PMng **(h)alag-* 'jerboa', PTM **(x)algi-n* 'otter (male)', PJap **írúká* 'dolphin') [EDAL: 289], [SA 28], PDr **èl-* 'rat' [DEDR: N°833], [GSD 319], PAl **alɣa-* 'animal, mammal; to catch sea mammals' [AD: 51-52], PYk **aʷĺɣa-* B 'fish; sea animal' [MYk 365] / **ol'oɣə* 'fish' [ПУЮГС: 295], [HDY: N°1627] < PN **HAlikʷV* 'a k. of animal' [SN 648] (**ʔVlV* 'a k. of small animal': Alt, Dr), [K-E 2008: N°1.1//] (~ ? IE, Al, Yk).

|| Yukaghiric attests a contamination of two roots, cf. N° **A.28**.

A.26. PE **amĭlʁa- (*amitə-lqa-)* 'radius, thin bone in arm': PYp **aməlʁa- (*amitə-lqa-)* 'radius, thin bone in arm', PIn **amil(ə)ʁa- (~ *amirʁa-)* [ME 1651] / **amiləqaR ~ *amitə(l)qaR* 'radius (bone)' [CED: 24]; cf. also PAl **ami-ðɣi-* (E) pl. 'calf of leg', (Atk) pl. 'metacarpal bones, metacarpus', (E, Ber) 'shank, lower leg' [AD: 66].

←b Erenow O.Mudrak reconstructed PEAl **ʔamiʎ(i)* 'shin, knee' [Mudrak 1989: 114], but now he regards the Eskimo item [MYp 2590] as a borrowing from Chukchean compound PChk **aʒma-Lqъl* 'thighbone, shoulderbone' [ЭСЧКЯ: 154], [MChk 55] and PChk **-əLqəl* 'bone' (in comp.) (with PKm **tək-tən* 'bone' < PKCh **'əlqəl* 'bone' [ЭСЧКЯ: 185] (only PChk), [MK 829]). Aleut item would be borrowed from the same source or from the corresponding Proto-Kamchatkan match.

[] The first part of compound is akin to PUr **äjmä* '(Näh-) Nadel (aus Knochen oder Holz)' [UEW: 22] / **äjmä* 'needle' [SW 22], [HPUL: 536], PAlt **egmV* 'shoulder, collarbone' (PTrk **egin* 'shoulder', PMng **eɣem* 'shoulder, collarbone', PTM **emu-ge* 'collarbone') [EDAL: 495], PYk **(t)amun* O 'bone' [MYk 121] / **am-* 'bone' [HDY: N°53] (cf. **tamnə ?* 'bone' [HDY: N°2378]), PNv **ŋäńvəɣ ~ *ŋäńɣəv* 'bone' [MNv

2185], ? PKCh _*hə́thəm (*thəm-)_ 'bone' (PChk _*ʁətʁəm, *ʁəm-, *-ətʁəm-_, PKm _*(k)th^{W}əm, *-t(h)əm_) [ЭСЧКЯ: 50] (_*həthəm_), [MK 537] (comp. of _*hət-_ and _*'əhəm_?) < PN _*ʔeɣmV_ 'a k. of bone' [K-ENB] (A, Chk).

[] The second, to PU _*luwe_ 'Knochen / bone' [UEW: 254], [SU 504] / _*lɨxɨ / *luxɨ_ 'bone' [SW: 125] / _*lɨxɨ_ 'bone' [HPUL: 538], PA _*nuŋe_ 'thigh' (PMng _*ǯoɣa_ 'waist part of the back', PTM _*nuŋa_ 'muscles; elbow', PJap _*muamuâ_ 'thigh, hip') [EDAL: 1022], PD _*el[u]m-_ 'bone' [DEDR: N°839], [GSD 324], PYpS _*nȧnəʁ_ 'bone, skeleton; to choke on bone' (+ Chpl _naχqwāq (ʁət), nəχqwaq_ [Men.] 'bone', _nəχquʁruk (ɣət)_ 'skeleton' (< _*nə/aŋ-qu-_ with _-qu-_ suff. of anat. terms) [ME 540] / _*nənəq_ 'bone', _*nənəRpaq_ 'harpoon' [CED: 226-227], PYk _*nə^{W}ŋ(g)ən, -m-_ O 'arm (to the fingers tip); shoulder; sleeve; hole of a sleeve; upper arm' [MYk 315] / _*nuŋkən / *nuŋən_ 'arm' [HDY: N°1551], PNv _*ŋänɣəv ~ *ŋänvəɣ_ 'bone' [MNv 2185], PKCh _*'nu̇n'mə_ 'shoulder, upper arm' (PChk _*Ruŋmə=_ 'arm (from shoulder to elbow)', PKm _*'ɨ̇n'in'e-ŋ (nʔ, nʡ)_ 'shoulder') [ЭСЧКЯ: 25] (_*čúŋmə_), [MK 205] < PN _*ĺuɣ^{w}e ~ *l̇Uŋ^{w}e_ 'a k. of limb' [SN 507] (Ur, Dr), [HDY: N°1551] (Yk, TM), [MPS 1332] (PPS _*ŋėnɣəm ~ *ŋenməɣ_ 'arm'), [K-ENB] (U, A, YpS, KCh).

|| Everywhere assimilation by nasalization, save in Uralic and Dravidian; in Eskimo assimilation by depalatalization.

A.27. PE _*ăriɣV-_ 'to dig, burrow, scratch': PYp _*ăriɣ-(untə)_ 'den; to dig (out)', PIn _*arɣa-ɣ-_ 'to dig; to scratch ice when seal hunting' [ME 603] / PYpS _*žiɣtə, *yiɣtə_ '(fox's) den' [CED: 388] (+ CAY _azíɣutaq_ 'snow or rock shelter', Chpl 'shelter around hole in ice for fishing' / 'lee made by snow' [CED: 29]), PIn _*ažɣaɣmik-_ 'do finger pull' [CED: 4].

|| From the same source is borrowed PAl _*ciɣti-_ 'den, lair (of fox, bear); (E) hole, burrow (of mouse); (E) nest' [AD: 138], though _**jiɣtə-, **níɣtə-, **ciɣtə-_, PYp _*iɣtə-_ 'den, lair' (AAY _nixta, (ŋ)ixta, nəxta, ləxta_, CAY _ixta_, Nun _iɣita_, [Stebbins] _sixta_), and back from the latter PAl _*iɣt(i)-_ 'pit; house pit; grave; (eye) socket' [AD: 181]. "Obscure relations" [AD: 138] (Al, E + Chk), also [AD: 181].

←b O.MUDRAK [ME 603] suggests a borrowing of the Eskimo item from PChk _*ъRŋъ- (~ *ə)_ 'to dig, to rake; to dig out' (with PKm _*riŋu- ~ *ziŋu-_ 'to dig out' < PKCh _*'ərŋu̯-_ 'to dig, to rough-hew' [ЭСЧКЯ: 157] (only PChk _*əš̌ɣə-_ 'to dig'), [MK 1044]).

[] PK _*qur-_ 'to pierce, make a hole' [ЭСКЯ: 265-266], [EWK: 569], PIE _*(o)rū-, *(o)rūg-_ etc. 'to dig' [NIE 2268], _*orw-_ 'ditch, ditch (as a boundary), scar' [NIE 953] / _*ereu-_ 'aufreißen' [WP II: 351-352], [IEW: 338], _*reu-, *reu̯ə-_ : _*rū̆-_ 'aufreißen, graben, aufwühlen; ausreißen; raffen' [WP ibid.], [IEW: 868-871], PAlt _*ȯr($_{1}$)i (~ e)_ 'to dig' [EDAL: 1061], PDr _*ur-c-_ 'to pierce' [DEDR: N°663], [GSD 1656] (cf. _*ur-_ 'to plough' [DEDR: N°688], [GSD 1668]) < PN _*qUrV_ 'to pierce, dig' [МССНЯ: 357] (_*qurʌ_ 'протыкать / to pierce': K, Alt, Dr + Sem), [DN: N°1884] (_*qurV_ 'to pierce, make a hole; hole, pit': w/o IE + Sem), [DN: N°2001] (_*rowV_: PIE _*rewə-_, PUr _*rowa_ [МССНЯ: 362], which is rather _*rokV_), [SN 472] (_*HurV_ 'to pierce; hole': K, IE, Alt, Dr).

// Nevertheless, phonetically, but not semantically, PKCh _*'əryʷə- (~ ъ)_ 'to tickle, pluck, scratch' (PChk _*əryə-_, _*ъryo-_, PKm _*č'ox "_, _*č'uyʷa-_) [MK 436] is closer, cf. PK _*γar-_ 'gutter, furrow' [EWK: 385], PIE _*aro-_ (PIH _*H-_ ?: Hitt _hars-_ 'aufreißen, beackern' [Tischler: 182-183], with doubts) 'to plough, furrow' [NIE 1296] / _*ar(ə)-_ 'pflügen' [WP I: 78-79], [IEW: 62-63], PSDr _*ar-_ 'plough (n.)' [DEDR: N°198], [GSD 177] < PN _*γarV_ 'to dig, plough; furrow' [DN: N°723] (_*γarHV_ 'to crush, grind': PK _*γery-_ 'to grind', IE, SDr + Akk _ḫrr_ 'to grind'), [SN 930] (_*HarV_ 'to plough': K, IE, SDr), [K-ENB] (~ KCh).

A.28. PYp _*ilaq_ 'small fish (k. of)' [CED: 128] / _*ilaʁ-_ 'small fish' [MYp 1909]
←b The item is borrowed from PChk _*i̇lʁaq_ 'bullhead, goby' (with PKm _*'ɨlʷȧqɨ_ 'gudgeon, goby' < PKCh _*'ilhaq_ 'gudgeon; bullhead' [ЭСЧКЯ: 171] (only Chk), [MK 951]).
[] Cf. PYk _*aʷĺγa-_ B 'fish; sea animal' [MYk 365] / _*ol'oγə_ 'fish' [ПУЮГС: 295], [HDY: N°1627] (cf. N° **A.25**), PNv _*alə_ 'бычок: ? Amur goby _Rhinogobius similis Gill_; common seal _Phoca vitulina L._' [MNv 39] (PPS _*ȧlèʁa_ 'gudgeon, goby; sea mammal' [MPS 30]); further, PIE _*alə(n)t-_ 'a k. of fish' [NIE 67] / [WP I: 92 sqq.], [IEW: 30-31] (zu _*albho-_ 'weiß') (cf. also PGrm _*ǣla-_ m. 'eel' [KLUGE: 1]), ?ϕ PDr _*vāḷ-_ 'a k. of fish' [DEDR: N°5379], [GSD 1746] and ?σ PAlt _*ɨ̄́bi_ 'fish bait' (< 'a k. of small fish or worm'?) (PMng _*(h)ibeye-sün_ 'fish bait', PTM _*ɨ̄lbɨ̄_ 'bait; uvula; plummet, sinker', PJap _*i(n)sa-r-_ 'to fish') [EDAL: 584-585] < (?) PN _*γʷejĺV ~ Hejĺγʷ V_ or sim. 'a k. of fish' [K-ENB] (IE, Alt, Dr, Nv, Yk, KCh).

A.29. PIn _*iγuv-_, _*iγuvcaΓ_ 'to suck, sting (insect); sting, bowsprit, proboscis; bee, bumble-bee' [MIn 1536] / PE _*əγu-t-_ 'to pierce, sting' [CED: 100-101]; PAl _*γu-_ 'tube, tubular opening; (E) nostril; (pl.) ornamental figures (circle wth a dot in the middle); to penetrate, go through, pass through', _*γu-t-_ 'to pierce, make a hole, put through; to pierce, go through (of object)' [AD: 164-165] (PEAl _*əγuv-_ 'to pierce' [CED: 100], [AD: 165]).
←b Notwithstanding M.Fortescue [LRABS: 135] (EAl, Chk), who regards the Eskaleutian and Chukchean items as cognates, Eskimo and Aleut items may be separately borrowed from PChk _*əʒγu-_ 'to bite' [ЭСЧКЯ: 175] (_*jəγu-_), [MChk 515].
[] PIE _*jAug-_ 'to sew' (PSl _*jъgъlā_ 'awl', PClt _*joug-_ 'to sew': Wlsh _gwnïo_, OIr _conóigim_) [Vasmer 2: 115], PUg _*j8kk3_ 'stechen; Stechinstrument' [SU 1785] < _*jUkV (~ -q-)_ 'to prick, pierce, to sew' [K-ENB] (IE, Ug, Chk). Cf. PIE _*aiḱ-_ 'sharp object; to wound with a sharp object' [NIE 1277] / _*ăiḱ-_ : _*ĭ̄ḱ-_ 'Spieß; mit einer spitzen Waffe treffen' [WP I: 7-8], [IEW: 15], [Vasmer 2: 115] (+ OPr _ayculo_ 'awl') < PN _*HIk'V (~ -_

q ̒-) 'to sew' [K-ENB] (IE, ? EAl). Cf. also PAlt **ā̀gV* 'sharp; whet' (PMng **(h)ag* 'part of blade (close to handle); notch on fish-fork', PTM **āga-* 'arrow point, notch; whetstone') [EDAL: 277].

A.30. PYpS **iʁalu-* 'moon', **iʁalə-ʁ-* 'star' [ME 632] / PYp **iʀaluq* 'moon' (+ CAY *iʁaliʁ-* 'to shine (moon)'), **iʀaləqətaaq* 'star' [CED: 144].
←b As indicated by O.MUDRAK, this is a loanword from PChk **əʒʁ-iɬhə-n* 'moon, month' [ЭСЧКЯ: 60] (PKCh **jəhi-lɣə-n* 'moon, month'), [MChk 519], regarded as a compound of **əʒʁə-* 'cloud; to cloud over; dull, murky, cloudy' (with PKm **'ja-jȧ-ŋ ''*, **'ja-ti- (*'ija-)* < PKCh **'əjħə (~ *jəħə)* 'cloud' [ЭСЧКЯ: 49] (**həjhə-* 'sky; cloud': Chk with diff. Km), [MK 545]) and **ilɣə-* 'white; pure; to whiten' (with PKm **'eɬɣe-* 'to glisten, glitter' < PKCh **'ilɣə-* 'white, brilliant' [ЭСЧКЯ: 54], [MK 710]), i.e. "cloud whiteness" or "whiteness in clouds". Though in [ME 632] the same PYpS item is regarded as a loan from PKm **je'a-lhə-n* 'moon' [MKm 466], that is less likely on our opinion. Otherwise, following the same investigator, the linkage of Kamchukchean item to PKCh **'ilɣə-* 'white, brilliant' is folk-etymological.
Now the author does not regard the Kamchatkan item as a cognate, but as a probable loan from Palana, which is dubious if we take in consideration the wide spread of the item over the whole Kamchatkan area.
[] PIE **aghl-* 'fog; drizzle' [NIE 36] / **aghl(u)-* etwa 'dunkle Wolke, regnerisches Wetter' [WP I: 41], [IEW: 8], PAlt **agà* 'rain; air' (PMng **agaɣar* 'air, atmosphere', PTM **aga* 'rain', PKor **ak-su* 'heavy rain', PJap **àkî* 'autumn') [EDAL: 273-274], PYk **jä-: *jä-lõõ-ʒə* 'sun' [MYk 677] / sub **je:l'ə-* [ПУЮГС: 303], [HDY: N°187] < PN **HagV* 'rain; cloudy sky' [MPS 669] (PPS 'cloud; celestial body': Yk, KCh), [SN 1145] (**aga* 'rainy weather': IE, Alt).
[] PK **(h)el-* 'flame, lightning' [ЭСКЯ: 78-79] (**wel-*), [EWK: 131], [SK 475], PIE **ēl-* 'to burn (tr.)' [NIE 1303] / **al-* 'brennen' [WP I: 88], [IEW: 28], PU **jelä* 'light; sun, day / Licht; Sonne, Tag' [FUV: 17], [UEW: 96-97] (+ Khnt (V) *jil* 'Himmelsrichtung', *jiл-pər'ɣi* 'gegen die Sonne, von Westen nach Osten' [STEINITZ: 360-361]), Alt: Evn *ilān* 'moon', PSDr **el-* 'light; to shine' [DEDR: N°829], [GSSD 734], PEAl **ələɣ-* 'to get burnt' [CED: 104], [AD: 194] (PE **ələ-ɣ-* 'to inflame, fume, burn': PYp **ələ-ɣ-*, PIn **ələ-ɣ-* [ME 687] / **ələɣ-* 'get burnt' [CED: 104]; PAl **ilɣ-* 'smell, odor, stench' [AD: 194]), PNv **hɨlə-* 'to glitter' [MNv 530] (b→ PTM **hēlbV* 'coal') < PN **helV (-HV)* 'light; to shine, to glitter' [ГДР: 9], [МССНЯ: 362] (**jelʌ* 'сверкать / to glitter': K, Ur), [ОСНЯ 1: N°140] (? **ʕʌlʌ* 'сжигать (жертвоприношения) / to burn (sacrifices)': Grg *(h)al-* 'flame' (> Sv *hal-* id.), PIE **(h)al-* 'to burn sacrifices, burn brightly' + AA), [ОСНЯ 1: N°148] (**jela* 'светлый / bright': PK **el-*, Ur, ? Alt, Dr), [LRABS: 144, 153] (Ur, Yk, EAl), [IENH: N°450] (**ʔi/el-* 'to shine, radiate, flash, glitter, glisten': K, SDr + Arab), [IENH: N°457] (**ha/əl-* 'to light up, beam forth, shine, brighten up, radiate': PIE **hal-b[ʰ]o-* 'white; cloud,

whiteness', PDr **al-* + AA + Sum), [DN: N°127] (**ʕ[a]lV* 'to burn (esp. sacrifices)': + Sem; conf. with **HalV* 'to be angry; to act perversely'), [DN: N°768] (**hAlV* 'to shine; bright'), [DN: N°768a] (**hiL V* 'new heavenly light'), [DN: N°2630] (**yel(ay)V* 'to shine; light'), [SN 514] (**HVlV* 'light; to shine': K, IE, Ur, ? Evk *dilačā* 'sun', SDr), [LRABS: 153] (PUS **jeləɣ-* 'to burn': Ur, Yk, EAl), [BLAZEK 2007: N°18] (Ur, both KCh), [ME 687], [MK 602], [K-ENB] (~ EAl, Nv, KCh). Many authors, B.COLLINDER [FUV: 17], O.TAILLEUR [TAILLEUR 1959: 418], K.REDÉI [UEW: 97], [REDÉI 1999: 36], I.NIKOLAEVA [ПУЮГС: 224], [HDY: N°671], M.FORTESCUE [LRABS: 144, 153], link Uralic item with PYk **jeĺə-* 'to get boiled, to ripen; ripe' [MYk 727] / **je:l'ə-* 'to boil, boil up, be cooked; to ripen' [ПУЮГС: 224], [HDY: N°671], which is however semantically questionable.

A.31. PE **urə-ka-* 'cod, dorse': PYpS **urəka-*: Sir *ucəkəχ*, pl. *ucəkaj* [Orr.], Chap *ūkaq (t)*, Nauk *ūkaq* [Jen.] (> Imaq *úkaq*); PIn **uuɣa-*: SPI (W) *ūɣauraq* [Ras.], NAI, WCI, ECI *ūɣaq*, Grn *ūɣaq, ūaq* [ME 1178] / **uðukaʀ* 'cod' [CED: 359].

←b Result of adoption of PKm **'ùjkĕ-n, *'újkĕ-n* 'capelin, lodde *Mallotus villosus Miller*' (that together with PChk **ukiš(i)* 'herring; a youngling of common seal before 1 year' < PKCh **'ukę'ni* 'herring; capelin, lodde' [MK 1075]).

[] PIE **ak-* 'a k. of fish' [NIE 27], [WP I: 26-27], PYk **oqiljaa (~ a^{W}-)* '[river] perch *Perca fluviatilis L.*' [MYk 1695], PNv **uk* '[Amur] goby *Quisquilius similis Gill*; [short-nosed] seahorse *Hippocampus hippocampus L.*' [MNv 335] (b→ Nan *uki* 'seahorse' [ССТМЯ 2: 253]) < PN **HVk*^{ʿW}*I* 'a k. of fish' [MPS 1149] (PPS **ŏḳĭ* 'perch; goby; herring': Yk, KCh), [K-ENB] (IE, Yk, KCh).

A.32. PE **ujuʁu (~ -ŋj-)* 'nephew, niece, younger brother': PYpS **uj(uʁ)u, *ujuʁa- (~ -ŋja-)*; PIn **ujuʁu(ɣ)* [ME 1275] / PYp **uɣuʀaq* 'younger sibling', PE **uɣuʀu(ɣ)* 'nephew or niece of man' [CED: 387]; PAl **huju-* 'her brother; cousin' [AD: 457]. [PEAl **uju-* 'nephew, niece, younger brother, cousin'].

|| Secondary PAl *h- under contam. with **huŋi-* 'man's or boy's sister; woman's sister' [AD: 447].

←b PChk **unʒu (~ ụ)* 'child, little boy; puppy' (with PKm **'uņ'ă-čhъ̭* < PKCh **'unju* 'child, young of an animal, younger brother' [MK 682]).

[] PIE **unAw-*: PSl **vъnūkъ* 'grandson' (despite [ЭСРЯ I: 328-329]), PUr **wäŋe* 'Schwiegersohn, Bräutigam / son-in-law, bridegroom' [UEW: 565], [SW: 114] / **we/äŋiw* 'son-in-law' [HPUL: 541], PDr **van-* 'elder brother's woman' [DEDR: N°5251], [GSD 1716] (irreg. *o- in PGnd), PEAl **uŋə-* 'sibling' [AD: 447] (Sir *uŋəłəχ* 'elder brother', Sir *uŋjəχ, uŋjəx* 'younger sibling', *uŋəλəχ* 'elder brother'; PAl **huŋi-* 'man's or boy's sister' [AD: 447]) < PN **Hunɣ*^{W}*e* ~ **wAnɣ*^{W}*e* 'son- or brother-in-law' [DN: N°2494] (**wäṅV ~ *[XV]wäṅV* 'relative of the opposite moiety': incorr. Tng + Chd and dub. Eg, Om), [SN

1616] (**wVnV* 'a relative': Ur, Dr), [K-ENB] (~ Sl, EAl).

B. Borrowings from Eskaleutian to Kamchukchean.

B.1. PChk **əpə-, *š-əp-* 'to stick in (also affixal); an abrupt riverbank; to flow into' (with PKm **'ъp-lė-* < PKCh **'əp-* 'to stick in') [ЭСЧКЯ: 163] (only Chk), [MK 828]
←b PE **ipəɣ-* 'sharp', neg. **ipɣə-i-(t-)* 'dull': PYpS **ipə(ɣ)-, *ipɣə-i-(t-),* PIn **ipəɣ-, *ipki(i)t-* [ME 1437] / **ipəɣ-* 'be sharp', **ipɣit-* 'be dull' [CED: 140]; cf. PChk **up- ~ *up-* 'to hook (with an edge); to stick in, prick; point, edge; to peck' [ЭСЧКЯ: 211], [MChk 995] (also in several compounds). Despite a very developed system of compounds in Chukchean and Kamchatkan cognate, the genuine origin of Kamchukchean item is hardly possible, PN *w- yielding PKCh *ɣ^{w}-, but the development PN *w- > PE *0- is regular.
[] PIE **wip-* 'pointed stick, spear' [NIE 1406] / sub **u̯eip-*, **u̯eib-* 'drehen; sich drehend, schwingend bewegen' [WP I: 240 sqq.], [IEW: 1131-1132] (cf. **wɨ̄b-* 'scar' [NIE 1409]), PAlt **i̯úb[u]* 'to dig; hole' (PTrk **oba* 'cavity, valley, PTM **(x)ub-gā* 'burrow, hole', PJap **úwa-* 'to plant') [EDAL: 609] < PN **wiPV* 'sharp; to stick in, prick' [K-ENB] (IE, Alt, E).

B.2. PEAl **majuʁ-* 'to climb' [CED: 195], [AD: 122] (PYp **maj-uʁ-* 'to climb up' [MYp 1065], **majə* 'heap, giant': Chpl *maja (-ət)* 'heap', *majəraχpak (-ɣət)* 'giant' [MYp 1064] / PE **mayuʀ-* 'to climb', PIn **mayuqqaq* 'slope or way up mountain', PE **mayuʀaʀ(aʀ)-* 'to climb gradually', **mayuʀaʀun* 'ladder' [CED: 195]; Al (E) *ajuʁ-* (< **hajuʁ-*) 'to ascend, climb' [AD: 122]). In this case, Aleut item should be borrowed from Eskimo.
←b Notwithstanding M.Fortescue [LRABS: 135] (EAl, Chk), we regard Chukchean item as a borrowing from Eskimo. Actually, only a nominal derivative is attested in PChk **maʒolɣъ-n* 'hill, elevation' [ЭСЧКЯ: 185], [MK 800]. In the opposite case, the development PN *-L-, *-Ł- > PChk *-j- (PKCh *-j(')-) looks irregular.
[] PIE **mal-* 'bank, shore, edge' [NIE 775] / **mel-*, **melə-* : **mlō-* 'hervorkommen, erscheinen, hochkommen; Erhöhung, Wölbung', **molā* 'Ufer' [WP II: 295-296], [IEW: 721-722], PDr **mal-* 'mountain' [DEDR: N°4742], [GSD 770] < PN **mA[Ł]V* 'mountain' [ОСНЯ 2: N°286] (**mAL$_{\Lambda}$ (L = l ~ ł)* 'mountain': IE, Dr), [DN: N°1411] (**mAl(ʔ)V* 'hill, mountain, sth. protruding': IE, Dr), [SN 636] (**malV* 'mountain': IE, Dr). Cf. PIE **meladh- / *ml[ā]dh-* 'top' [NIE 3159] / **melōdh- (*molədh-, *m$_{o}$lədh-)* 'Erhöhung, Kopf' [WP II: 295], [IEW: 725], PAlt **meĺǯu (~ -a)* 'head' (PTrk **baĺč* 'head', PMng **malǯa-, *melǯe-* 'bald', PTM **meli-mu* 'neck joint; back part of neck; sinciput; fish skeleton; skeleton',

PKor **mə̀rí* 'head') [EDAL: 910-911], PDr **mē-[l-]* 'up; height; fine, good' [DEDR: N°5086], [GSD 849] < PN **mel̇V* 'top' [DN: N°1417] (**mAlHo* 'head, skull': IE, Alt + Lyb), [SN 709] (**mVlV* 'top': IE, Alt, Dr).

C. Questionable borrowing or direction of borrowing.

C.1. PEAl **puju-* 'smoke' (PE **puju-* 'smoke, soot': PYpS **puju-*, PIn **puju- (-ʁa-)* 'smoke; steam; to smoke, to give off smoke' [ME 685] / **puyuʀ* 'smoke' [CED: 272]; PAl **hujuʁ(-)* 'fumée (du feu), fumée blanche, vapeur, brouillard (sur la mer), etc.' [AD: 457].

←b? Semantics point rather to original, than the borrowed character of the item, though Chpl *pujúq*, Nauk *pujúk* and Sir *pújəχ* 'smoke' and 'soot', would be influenced by PChk **puʒe* " 'soot; roasted meat' (with PKm **puje-* < PKCh **puje* 'warmed up / cooked on vapour or fire; roasted meat; soot' [Mudrak 2000: 114], [MK 111]).

[] ?σ PK **pu-* 'to swell, leaven, rise (of dough)' [ЭСКЯ: 192], [EDKL: 206] (**pu-* 'to inflate; to rise', **pu-wn-* 'to boil'), [EWK: 361], ?σ PIE **spē- (-ph-)* 'to ripen, flourish, prosper' [NIE 2596] / **sp(h)ē(i)-, *spī-* und **sphē-* : **sphə-* 'gedeihen, sich ausdehnen = dick werden, vorwärtskommen, Erfolg haben, gelingen'; **sphē-ko-* 'Kraft', **sphē-ti-* 'das Gedeihen', **sphə-ro-* 'ergiebig', **sphid-to-* 'dicht gedrängt' [WP II: 656 sqq.], [IEW: 983-984], [NIE 2596] (+ Hitt *ispai-* (II) 'sich satt essen' [TISCHLER: 408-409], ? Tokh B *spāw-* 'subside, run dry' [Adams: 717]), PUr **peje-* 'kochen, sieden / to cook, boil' [FUV: 12], [UEW: 368], [SU 745] / **pexe-* [SW: 92] / **pexi-* 'cook' [HPUL: 539, PAlt **p'uje* 'to whirl, boil' (PTrk **üjük* 'quicksand; to sink', PMng **hujil-* 'whirlpool', PTM **puju-* 'to boil') [EDAL: 1179], PD **poɣ-* 'to smoke' [DEDR: N°4240], [GSD 1309], PYk **əpoj-, *pəojə-* 'suntan; to get tanned, get dried' [MYk 1650] / **pojə* 'tan' [ПУЮГС: 317] / **po:jə* 'spring tan; epidemic' (but hardly 'cheek') [HDY: N°1841], PNv **boj-* 'to smoke (intr.)' [MNv 1645] < PN **p'uje* (or **bʷeje* if K and IE are not to here) 'to boil; to ripen; smoke' [МССНЯ: 343-344] (**ṗu(H)jʌ* 'кипеть / to boil (intr.)': K, IE, Ur, Alt), [DN: N°1838] (**P̱[ü]H/QjV* 'to boil, get ready (food), ripen': IE, Ur, Alt), [SN 193] (**ṗuHjV* 'to boil': K, IE, Ur, Alt), [LRABS: 134, 145, 150, 156, 173] (PUS **pejə(ɣ)- / *pojə(ɣ)-* 'cook, steam': Ur, EAl, Yk, Nv *poju-*, KCh, noting TM and incorr. PUr **päjwä* 'fire').

|| There is obviously a contamination of two originally distinct Nostratic roots here, 'to swell, leaven; to whirl, boil' and 'smoke; soot'. For Kartvelian and Indo-European items cf. also PYk **poj(u)-* O 'numerous' [MYk 375], PNv **pėj-* 'to leave, not to take with os., to stop doing sth.' [MNv 1785], PChk **paʒa-* 'to stop doing sth.' [ЭСЧКЯ: 192] (**paja-*), [MChk 1040] sub [MPS 1137] (PPS **peju-* 'to be superfluous').

C.2. PE **ńuja-, *nuja-* ’hair’: PYpS **ńuja-, *nuja-*, PIn **nuja-* [ME 438] / **nuyaʀ* [CED: 244].

←b PChk **ŋuʒ ʺ* ’strand of wool; litter, sweepings; dirty water; broom, besom’ [MChk 918] (with PKm **č́ẹ̀-[ḷχъ̣]* ’hair; lashes’ [MKm 515], [СКЛ: 36] < PKCh **ŋùjə-* ’strand of wool’ [ЭСЧКЯ: 105]).

[] PUr **wäjä* ’langes Tierhaar’ [UEW: 562], PAlt **ŋū̀je* ’long hair’ (PTrk **öjek* ’part of animal’s skin under the neck or between legs’, PMng **öjekej* ’lower part of animal’s belly’, PTM **ŋūjelse* ’hair under the neck; tie, scarf’, PJap **bə̀ (*bùa)* ’tail’) [EDAL: 1037], PSDr **majir* ’hair’ [DEDR: N°4707], [GSD 764] < PN **ŋᵂAjV* ’un long poil/cheveu’ [DN: N°1649] (**ŋ[uw]äyV* ’long hair’: Ur, Alt, SDr + Chd: Mrg), [SN 1089] (**ŋVjV* ’hair’: Ur, Alt, SDr).

|| The genuine PN **ŋᵂ-* would not be preserved in Eskimo.

|| One may surmise the opposite direction of borrowing if Eskimo item is akin to PAlt **ńi̯ū̀ra(-k῾V) (~ -ŕ-)* ’hair’ (PMng **norakai* ’short (of hair)’, PTM **ńū́ri-kte* ’hair’, PKor **narot* ’whiskers, beard’) [EDAL: 993].

C.3. PE **q[ə]laΓ-* ’spirit, shaman’s power’: PYpS **qəla-Γ- ~ *əqla-Γ-* ’spirit; to practice shamanistic divination’, PIn **qila-, *qəla-, *qəlaunt* ’spirit; to invoke spirits; to practice sorcery; drum’) [ME 914] / **qəla-* ’invoke spirits (shaman)’, PIn **qəlaun* ’drum’ [CED: 295]; Al (Atk) *qla-t-* ’to offend, to give offense or scandal to (child); to take offense; to tempt; offense, scandal; temptation’ [AD: 328-329].

←b The direction of borrowings is unclear, but probably from the PKCh **kạlạħə* ’evil spirit’ (PChk **kạLạʁə* ’evil spirit, devil; idol’, PKm **kala-* ’horror; frightful’) [ЭСЧКЯ: 68] (**kelčhə*), [MK 784], as the phonotactics show. [PEAl **qəla-* ’(evil) spirit’ [CED: 295], [AD: 329]].

[] PA **gàli* ’to hate; wild’ (PTrk **K(i)al* ’wild, rough’, PMng **galǯaɣu* ’wild, rabid’, ? **gelme-* ’to be scared, afraid’, PTM **galu-* ’to hate’, PJap **kirap-* ’to hate’) [EDAL: 528], PYk **qaᵂi-l* ’god; to baptize’ [MYk 149] / **qoj-* ’God’ [HDY: N°2048] (cf. **qojδə-ʒaajə-* ’pope’ [MYk 1042]), PNv **kəlù-* ’to be afraid; fear; fearful’ [MNv 215] < PN **galV* ’fear; evil spirit; to be scared’ [MPS 1206] (PPS **ḳajlu* ’evil spirit, god’), [K-ENB] (A, EAl, KCh).

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The Number 'One'

Stephan Hillyer Levitt

Abstract. This article examines the words for 'one' in the languages classed together as "Nostratic" by Illič-Svityč and Bomhard and Kerns, or Bomhard alone, "Eurasiatic" by Greenberg, and "Duraljan" by Hakola. It argues that the number of basic words for 'one' can be reduced to perhaps two; and it re-examines a few forms from the vantage of its analysis.

There are about five basic words that are in the main figured to be used for the number 'one' in the various languages classed together under the rubrics "Nostratic" by Illič-Svityč and Bomhard and Kerns, or Bomhard alone, "Eurasiatic" by Greenberg, and as "Duraljan" by Hakola. Perhaps because of the number of these forms, words for the number 'one' and 'single' are not covered by either Illič-Svityč (1989a, 1989b, and 1990) or by Bomhard and Kerns (1994) or Bomhard (1996). Greenberg (2000-2002) includes three of these basic words in his listing of Eurasiatic etyma.

Bomhard (2008) also does not refer to these words for the number 'one.' And for 'single,' Bomhard (2008) refers only to a reconstructed form that the meaning 'single' has been attributed to of late.[1] Bomhard (2011) refers the reader back to the "Index" of Bomhard (2008) for Nostratic forms with an Indo-European component. And its section on Nostratic forms with an Indo-European component indeed does not appear to list any of the forms for the number 'one' in question, or related forms. For additional Nostratic forms without an Indo-European component, Bomhard (2011) does not list any words for 'one' or 'single.'

It is the contention of this paper that the number of these basic words can be reduced to perhaps two basic words. A comprehensive discussion of these forms also makes it possible for us to re-evaluate some of the etymologies for these words that present problems, such as Skt. *eka* 'one' and Lat. *sōlus* 'alone.'

1. The *tik* forms.

Bengtson and Ruhlen (1994: 322-23) have pointed out one of these words in their listing of "global etymologies." As summarized by Wade (2000: F4):

> In the Nilo-Saharan languages the word *tok*, *tek* or *dek* means one. The stem *tik* means finger in Amerind, one in Sino-Tibetan, 'index finger' in Eskimo and 'middle finger' in Aleut. And an Indo-European stem *deik*, meaning to point, is the origin of *daktulos*, *digitus*, and *doigt* – Greek, Latin and French for finger – as well as the English word *digital*.

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[1] These comments are based on "All Fields" searches for "one," "single," "finger," "*oi*" [= PIE **oi*-], and "*deik*" [=PIE **deik*-] in the "Proto-Nostratic Dictionary" in Bomhard (2008 [ebook]). I would like to thank Bob Scott, head of Columbia University Library's Digital Humanities Center for his help with this ebook.

This stem is represented in Sanskrit by the root *diś-* 'to point out' and by the noun *diś*, meaning 'direction.' It is represented in English as well by *index* and *indicate*, both from Lat. *indicare* 'to indicate, point out or point to,' and in German by *zeigen* 'to point (at, to), to show, to indicate.' Bengtson and Ruhlen list forms for Niger-Congo, Nilo-Saharan, Afro-Asiatic, Indo-European, Uralic, Turkic, Korean, Japanese-Ryukyuan, Ainu, Gilyak, Chukchi-Kamchatkan, Eskimo-Aleut, Yeniseian, Sino-Tibetan, Na-Dene, Indo-Pacific, Austroasiatic, Miao-Yao, Daic, Amerind, and possibly Austronesian. Greenberg (2000-2002/2: 69-70) lists forms for Proto-Indo-European, Proto-Altaic, Korean, Japanese, Ainu, Gilyak, Chukotian, and Eskimo-Aleut. Bengtson and Ruhlen's listing is charted in brief in Wade (2000). Absent from Bengtson and Ruhlen's listing are forms for Australian aboriginal languages, Dravidian, Sumerian, Khoisan, and Kartevelian.

2. The Dravidian forms and the situation in Australian aboriginal languages.

The Dravidian situation with regard to the number 'one' was treated in detail in Levitt (1989a: 132-39). This article, though, was published with many printing errors, making it difficult to follow. The main points in this argument were given as well, with the printing errors corrected, in Levitt (1998: 144-46). For the reader's convenience, I reproduce this here as well. It is on the basis of this analysis that I dismiss the correspondences given with Dravidian forms by Tyler, by Hakola, and by Hakola and Assadian for the Uralic forms, mentioned below in **3b**. To be noted is that since writing this analysis, I have come across David (1966: 240, 284-85 [Supplementary Note 4]), whose analysis is comparable to mine, and which analysis supports mine. David points out that the related Tamil root is to be found in *ol* 'to unite (often with reality)' 'to be joined, possible, feasible,' with regard to the related forms for which throughout Dravidian see *DEDR* 1006 Ta. *ollu* (prob. *olli*). See also *TED* 1.3: 373a. At play here is the early noticed alternation in Dravidian between *r* and *l*.[2] The Dravidian forms are listed in *DEDR* 990 (a) Ta. *oru* (before consonant), *ōr* (before vowel) 'one' ... (b) Ta. *okka* 'together' ... (c) Ta. *oṇṭi* 'that which is single, solitary or single person, one who is alone,' *oṭṭai* 'one, one of a pair, odd number, singleness, uniqueness (= *oṟṟai*)' ... (d) Ta. *oṉṟu, oṉṉu* 'the number one, one (neut.)' ... Ma. *onnu* 'one (neut.)' ... . The analysis of these forms follows:

> In formal Tamil, the basic forms for the number 'one' are *ōr* and *oru* (listed in *DED* 834 [a]). These forms reflect the standard law, first formulated in modern Dravidian studies by Krishnamurti in 1955, that a radical vowel is long when not followed by a derivative suffix, and short when followed by a derivative suffix which is a vowel. In classical Tamil the only form used is *ōr*. These forms function as adjectives.

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[2] See, for example, Konow (1903: 456), where he cites Bishop Robert Caldwell as well. And see Levitt (1989a: 130-32, 142-43) where a number of specific examples are given, and the reasons why more are not in evidence is suggested. Zvelebil (1970: 144 [1.32.1.7]) mentions this alternation in passing.

Besides this there is a nominal form for 'one,' *oṉṟu*, colloquial Ta. *oṇṇu* and Ma. *onnu*, and related forms such as *oṟṟi* (*-pp-*, *-tt-*) 'to be united with, to be odd (as numbers)', *oṟṟumai* 'union, oneness,' and *oṟṟai* 'one, one of a pair, odd number, singleness, uniqueness' (listed in *DED* 834 [d]).

We as well have such forms as Ta. *okka* 'together' (listed in *DED* 834 [b]), and such forms of colloquial basis as Ta. *oṇṭi* 'that which is single, solitary or single person' and *oṭṭai* 'one, one of a pair, odd number, singleness, uniqueness (= *oṟṟai*)' (listed in *DED* 834 [c]). Ta. *oṇṭi* is based on a verbal form *oṇṭu* (*oṇṭi-*) listed in *DED* under the verbal form to which it is related, *oṉṟu (oṉṟi-)* ' to unite, become one, be on intimate terms with' (*DED* 834 [d]), and Ta. *oṇṭi* is used in literary Tamil with the meaning 'camel, or dromedary.'

By standard rules of euphonic combination in classical Tamil, *-ṉṟ-* is the result of *l* + *n* > *ṉ*, *ṉ* + *t* > *ṉṟ*. Thus *l*, with the addition of a common derivative suffix which appears to have Proto-Dravidian integrity since it can be found in languages in various sub-families of Dravidian, results in *ṉṟ*. … Similarly, *l* + *t* > *ṟṟ*. In general, *l* + a stop (such as *k*, *c*, *t*, *p*) results in *ṟk*, *ṟc*, *ṟṟ*, *ṟp*, while *l* + a nasal (such as *n* or *m*) results in *ṉ* or *ṉm*. *l* + *v*, however, results in *rv*, and *ṉ* + *p* results in *rp*. While *l* + *k* > *ṟk*, *ṉ* + *k* > *kk*. Thus, *l* + *n* + *k* (= *ṉ* + *k*) > *kk*. The trill *ṟ* + any of the stops, for instance, would on the other hand itself not be subject to alteration.

We can explain, in this way, our forms as a basic form containing *r*, as in Ta. *ōr*, *oru*, and a combining form to which suffixes *-nt-*, *-t-*, and *-ṅk-* are added which contains *l*. This would explain *oṉṟu*, *oṟṟi*, and *okka*, for instance, economically. The form *oṉṟu* < **ol-* + *nt* + *u*. The form *oṟṟi* < **ol-* + *t* + *i*. The form *oṟṟumai* < **ol-* + *t* + *u* + *mai*. The form *okka* < **ol-* + *ṅk* + *a*.[3]

…

For an explanation of such forms as colloquial Tamil *oṇṇu* and such forms as Ta. *oṇṭi* and Ta. *oṭṭai* (as in *DED* 834 [c]), we must rely in basics on historical developments which have not been outlined clearly to date.

In modern formal Tamil, when a suffix *-nt-* is added to a verbal form which ends with *l* the resulting sound cluster is *-ṉṟ-*. This is pronounced in Tamil with which the writer is familiar as *nd*.

This is in accord with the development of the corresponding hypothetical consonant cluster in Proto- Dravidian, **nṯ*, to the various forms which provide evidence for this cluster in modern Dravidian languages: Ma. *ṉṉ*, To. Ko. *ḏ*, Konda *nṟ* (= ṇḍ*r*), Tu. Kui Kuwi *nj* / *j*, all other CDr and NDr *nd* / *nḍ* / *ṇḍ*. These correspondences have been summarized in several places, such as Krishnamurti 1961: 70 (1.165) and Zvelebil 1970: 171-73 (1.40.6 - 1.40.6.2).

In other instances in Tamil, though, *ṉṟ* is not pronounced *nd*, but rather there is a variability not out of accord with the developments elsewhere in Dravidian. In some instances, this variability may reflect that the colloquial forms are derived in fact from forms other than the formal forms with which they are equated. Ta. *oṉṟu*, for instance, while it does not appear in classical Tamil, is

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[3] With regard to the antiquity of such forms as Ta. *okka*, etc., which subset of etyma is represented throughout Dravidian, and the antiquity of the rules of euphonic combination preserved in classical Tamil, note Hakola's comparison of Ta. *okka* 'together,' *okkai* 'relations, kinsfolk, family' with Finnish *luokka* 'category, class, grade' (2009-11, *Supplement*, 36, no. 135).

> pronounced generally in modern colloquial Tamil as *oṇṇu*. In the Brahman dialect of South Arcot district as spoken to non-Brahmans, while Ta. *oṉṟarai* is pronounced *oṇḍre,* Ta. *en eṉṟāl* is pronounced *ēnnā,* Ta. *iṉṟaikku* is pronounced *inniki*, and Ta. *niṉṟēn* is pronounced *ninnēn*. (See Zvelebil 1970: 173 [1.40.6.2] for a different treatment of comparable data.) Ta. *oṇṭi* is clearly derived from a verbal form related to Ta. *oṉṟu* (*oṉṟi-*), just as Ta. *oṭṭai* clearly is the same form as Ta. *oṟṟai*. What we would appear to have in some of these instances is a split of *l* > *l* and *ḷ*^{2} coupled with a merger of *ḷ* and *ḷ*^{2} within Proto-Dravidian or in pre-Dravidian, as suggested by Kui *l, ḍ,* C]*l*, Br. *l*, *ḻẖ*, To. *s̱*, *ł* corresponding to PDr **l*, and by Kui *l, ḍ,* C]*l*, Br. *l*, *ḻẖ*, To. *l*, *ḷ*, Tu. *l*, *ḷ* corresponding to PDr **ḷ*. This is not the appropriate place to discuss this in full. By such an explanation, though, such forms as Ta. *oṇṭi* and *oṭṭai* would be in accord with such rules of Tamil euphonic combination as *ḷ* + *nt* > *ṇṭ* and *ḷ* + *t* > *ṭṭ*. Perhaps such a form as Ta. *oṇṇu* can be explained by such rules of euphonic combination as *ḷ* + *n* > *ṇ*, and perhaps *ṇ* + *u* > *ṇṇu*. Or perhaps we simply have evidence of **nṯ* > Ta. *ṇṇ*, *ṇṭ* (*ṇḍ*), and *nn* alongside *ṉṟ* and *nd* each in different circumstances. *ṟṟ* corresponding to *ṭṭ*, of course, suggests similarly **ṯṯ* > Ta. *ṭṭ*, just as in Telugu and Gadba **tt* > *ṭṭ*, *ṭ*.
>
> Aside from those rules given above, the relevant rules in Tolkāppiyar's grammar of Tamil would appear to be: 1.8.303, 1.8.307, 1.8.397, 1.8.398, 1.8.399, 1.8.400. For the sake of space, I do not give these rules here, but rather refer the reader to them in the various translations.
>
> The situation with regard to Ma. *onnu* is at first glance not clear, though it certainly would appear to correspond to Ta. *oṇṇu* rather than be based on a form generated independently from within the old form of Tamil from which Malayalam was derived that would have composed the form, based on a stem **ol-*, with a suffix *-n-*. We have some light on this form, indicating its antiquity, from a Kuruḵẖ form as will be seen below.

Further analysis follows as well.

Of note is that Murray B. Emeneau (1957), in his discussion of the Dravidian words for the number 'one,' provides evidence for doublets one member of which contains forms which provide evidence for an alveolar **ṉ* and the other member of which contains forms which provide evidence for an alveolar **ṟ*.

Scholars of Australian aboriginal languages have argued that these languages are most closely connected to Dravidian. This argument is summarized in brief and the evidence of modern genetics supporting this argument is given in detail in Levitt (2009: 140-44, modified slightly in 2010: 53-55, 57-61). To note just one point, the Y-chromosome genetic marker M130 has been found among an entire village of Kallar near Madurai in Tamil Nadu. This genetic marker also occurs with frequency among Australian aborigines, but is found with relative scarcity elsewhere. The Kallar are one of the two main groups in Tamil Nadu among whom the boomerang is found, just as this weapon is found among Australian aborigines. With regard to numbers, Dixon (2002: 67) has noted,

> Most Australian languages lack a separate class of numbers. There are generally reported to be forms meaning 'one,' 'two' – also sometimes 'three' – and 'many'

> in the adjective class. However, Hale (1975) has argued that these are not numbers in the strict sense of the term but rather "indefinite determiners."

Also see in this regard, for a fuller discussion, Dixon (1980: 107-8). Blažek (2006: 277) notes two such words for 'one,' which Levitt (2011-12) suggests may in fact be in relationship with the Dravidian words for 'one.'[4]

With regard to Dravidian words for the number 'one,' the legitimate question arises as to why Dravidian appears to lack any *tik* words. In this regard, I could not help but notice that a number of the *tik* words reported by Bengtson and Ruhlen, and by Greenberg, mean 'hand.' Thus Yaaku *tegei* 'hand,' Japanese *te* 'hand,' Ainu *tek* ~ *teke* 'hand,' Proto-Austroasiatic **(k-)tig* 'arm, hand,' Amerind: Yuchi *saki* 'hand,' Nisenan *tok-* 'hand,' Karok *tīk* 'finger, hand,' Arraarra *teeh'k* 'hand,' Tarahumara *sika* 'hand,' Shiriana *īthak* 'hand,' Cahuapana *itekla* 'finger, hand,' Ticuna *suku* 'hand,' Cavineña *eme-toko* 'hand.' This suggests to me that Dravidian carries this form in a formative stage, in *DEDR* 2023 *kai* 'hand, arm …'; (*-pp-*, *-tt-*) 'to feed with the hand.' This form is seen by *TED* 2.3: 50ab to be related to *DEDR* 1957 Ta. *cey* (*-v-*, *-t-*) 'to do, make, create, cause; *n.* deed, act, action' [PDr **key-*, etc.]. Both sets of etyma are found across the board in Dravidian.

Also consider *DEDR* 1571 Ta. *cil* 'some, few' … Ka. *kela* 'some, several, a few,' etc. These forms are found only in South and Central Dravidian, PSCDr **kil-*, **kel-*, and perhaps signify 'a handful.' Also note *DEDR* 1577 Ta. *cil* 'small piece (as of broken glass), potsherd, flat round stone' … Ka. *kelle* 'a splinter, shiver,' etc. These forms are also found only in Central and South Dravidian, PSCDr **kil-*, **kel-*. Such, of course, could be used for counting, just as one's fingers. The latter practice is suggested by the semantic spread of the *tik* forms reported.

At play in these Dravidian forms would be the principle pointed out for Dravidian in Levitt (2003), specifically that root final *-l* alternates with root final *-ḷ*, and that these alternate in metathetical forms with initial *t-*, which alternation was suggested by some of the Nostratic correspondences pointed out by Illič-Svityč.

Also at play, note Devaneyan's observation (2004: 17) that *-il* in Tamil has a diminutive sense. Thus, Ta. *kuṭi* 'house,' *kuṭil* 'cottage.' Just so, for example, in Yiddish as well, *-la* (or, *-le*) added to *Maid* 'girl' > *Maidela* 'little girl,' *-la* added to *Totie* 'son' > *Totiela* 'little son, little boy,' and *-la* added to any name, such as *Steve* or *Stevie* > *Stevela* 'little Stevie.' And Eng. *roll* < Lat. *rotula*, diminutive of *rota* 'wheel,' by current opinion.

Hereby, *tik* words would be in origin metathetical forms of a diminutive of a word for 'hand,' signifying 'finger, one.'

And in this regard, also consider *DEDR* 3011 Ta. *takkiṇi*, *tukkuṇi* 'a small quantity, a little,' Tu. *takkaṇa*, *takkana* 'little.' These forms are represented only in these two languages, Tamil and Tulu. Note that vowels are not always regular in Dravidian.

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[4] See notes on pp. 87-88 to entries listed under *DEDR* 4507, 4508, 4541, and 5119 in list no. 10 **ō̆r-* 'one, oneness' on pp. 83-88 (vol. 41.1). Also see the introductory discussion on pp. 129-41 (vol. 40.2) for context.

3. The Indo-European forms.

In Levitt (1989a: 139) it was argued that the Dravidian forms for the number 'one' were the origin of the Indo-European forms for 'one.' In that location, this suggestion involved basically a substratum theory. This connection was suggested in Levitt (1998: 144-47, no. 13) as a Nostratic connection. These Indo-European forms for 'one' include Eng. *one*, Germ. *ein*, Lat. *ūnus*. These are given in full in Pokorny (1959-69/1: 286) under PIE **oi-nos*. The group is also referred to by Greenberg (2000-2002/2: 124, no. 284), though I would question his Yukaghir, Middle Korean, and modern Korean forms here. A Nostratic connection between the Indo-European and Dravidian forms for 'one' was also suggested by Devaneyan (1966: 232). Levitt was unaware of Devaneyan's work in 1989 and 1998 (see Levitt 2000: 409, n. 1). G. Devaneyan is a native Tamil linguist who is very linguistically perceptive.

The alternation between **l* or **r* / **l* in the Dravidian forms, and the **n* of the Indo-European forms is paralleled in other correspondences given in Levitt (1998), such as Eng. *inn* and the etyma in *DEDR* 494 Ta. *il* 'house, home,' *illam* 'house, home' … Te. *illu* 'house, dwelling, habitation'; Eng. *no*, *not*, Germ. *nein*, *nicht*, Skt. *na*, *an-* and the etyma in *DEDR* 2559 Ta. *il* 'non-existence, death,' *illai* 'it is not (in Old Tamil with a complete negative paradigm), no' … Ma. *illa* 'does not exist, there is not, no, not,' and so forth; Eng. *hound*, Lat. *canis*, forms listed in full in Pokorny (1959-69/1: 632-33), PIE **ḱu̯on-*, **ḱun-* and the etyma listed in *DEDR* 1796 Ta. *kurai* (*-pp-*, *-tt-*) 'to bark, jubilate, shout, *n.* noise, roar, shout' … *kukkal*, *kukkaṉ* 'dog' (PDr **kū̆r- / *kū̆kk- / *kūrkk- / *kor- / *kuc-*), which forms give rise to Skt. *kurkura, kukkura, kukura, kukkuṭa* 'dog' and the Hindi forms *kuttā, kuttī.* As well to be included with the Indo-European forms in the latter grouping are Eng. *dog*, Eng. *cur*, these two forms coming from different sources, and Eng. *growl*, *gurl*, by my analysis. And compare some of the Australian aboriginal words for 'wild dingo' and 'tame dingo,' colloquially referred to as 'dingo' and 'dog,' *gudaga*, *garli*, and *yugurru* (Dixon 2002: 104-5; see Levitt 2010: 55-57).

Also note that in Prakrit there is an alternation such that *n* > *l* on the one hand, and such that *l* > *n* on the other. See Pischel (1900: 247 and 260) regarding this alternation in Indo-Aryan.

As well, note the alternation argued in Levitt (1989a) between *r*, *l*, *ṟ*, and *ṉ*, with *ṟ* and *ṉ* being allophones of *l*. And consider the opinion of Devaneyan (1966: 204) that *ṟ* and *ṉ* are later developments in Tamil, and that before the formation of alveolar *ṉ*, the dental *n* was medial and final as well as initial. For a comparable alternation between *r*, *l*, and *n* in Afro-Asiatic, see Hodge (1998: 237). Pokorny (1960: 161) mentions an alternation in Afro-Asiatic between *r*, *l*, *n*, and *d*. According to Bomhard (2008: Chapter 1, Chart 1 ["The Nostratic Macrofamily"], 2011: 4-5), Afro-Asiatic separated from the rest of Nostratic first, then Dravidian, and then Kartvelian. Levitt (2009: 148-49) presents a point that would seem to indicate that Dravidian has preserved forms that are older than those of Afro-

Asiatic, though. And see the comments above with regard to the seeming genesis of the *tik* words being suggested by Dravidian forms. Greenberg has expressed the view in correspondence to Bhadriraju Krishnamurti that Dravidian would be a sister of his Eurasiatic, and not a daughter (Krishnamurti 2003: 46). Dravidian is thus construed by Greenberg to be older than Uralic, Altaic, and Indo-European.

Skt. *eka* 'one' does not fit neatly with this analysis, nor does it fit well with the standing interpretations.

Pokorny lists it under PIE **oi-nos*, and would have it be formed with a formative suffix *-ko-*, as is Skt. *dvika* 'consisting of two,' giving as parallel forms Lat. *ūnicus*, Goth. *ainaha*, OChSl. *inokъ*. Skt. *eka* is not strictly parallel to these latter forms, though. And there is in Sanskrit as a parallel form to Skt. *dvika*, Skt. *ekaka* 'single, alone, solitary' from the time of the late *Ṛgveda*, which Pokorny himself notes as being parallel to Skt. *dvika* (1959-69/1: 231). In its first occurrence, Skt. *ekaka* appears in context with Skt. *dvaka*, the Vedic form comparable to the later Sanskrit form *dvika*, and *trika* 'consisting of three.'

Gonda (1953: 75-80), on the basis of a supposition that forms with the suffix *-no-* in Indo-European, as PIE **oi-no-*, are collectives, arrives at an etymology for Skt. *eka* by thereby placing it in the same morphological class as *dvika*. He feels obliged, though, to explain how *eka* can stand in Sanskrit beside *eva*, the cognate of which in Avestan, Av. *aēva*, means 'one, single, alone.' He feels obliged to explain how two words for the unity can exist side by side with each other in the same language. He sees the forms **oino-*, **oiko-*, and **oiwo-* to be a group with a single connotation.

In contrast, Pokorny would see PIE **oi-no-s* to be formed with a *no-* demonstrative. See Pokorny (1959-69/1: 75).

Skt. *eva* 'so, just so, alone' has parallel cognate forms in Greek and Cypriot. Pokorny groups it apart from the words for 'one,' but together with the same overarching stem, more immediately with Skt. *eṣa* and *etat* 'this, this here.' Pokorny (1959-69/1: 75) also groups Skt. *eva*, Av. *aēva*, OP. *aiva* with Skt. *vā* 'or,' with clear cognates in Greek and Latin, and with Skt. *iva* 'just so' and *evam* 'thus.' Pokorny's separation of these forms from the more common Indo-European forms for the number 'one' is, indeed, probably the case on the latter account, in contradiction to Gonda's analysis.

Mayrhofer, in *KEWA* 1: 126 and *EWA* 1: 262-63, agrees with Gonda's analysis. So also T. V. Gamkredlidge and V. V. Ivanov (1984), cited by Greenberg (2000-2002/2: 124, no. 284), which authors also follow Gonda's analysis.

3a. Levitt (1989a: 139) proposed that Skt. *eka* 'one' was instead to be connected with Heb. *eḥad* 'one', Ar. *waḥid* 'one' (*aḥad*, pron. 'one, someone, somebody'), Akk. *ēdu* 'single, alone' (the *ḥ* not being expressed in the Akkadian writing system).[5]

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[5] See also Levitt (1995-96: 222, n. 2 [which n. should have been printed at the foot of p. 236]) and *AD* 4: 36a-38a.

For the number 'one,' Akkadian used *ištēn* m., f. *ištêt*, seemingly unrelated in this usage to anything outside Akkadian.[6] Also seemingly unrelated in such usage to anything outside Sumerian, are the Sumerian words for the number 'one,' *aš*, *diš*, and others.[7]

In Biblical Hebrew, *-d* = [-*ð*]. Such a phenomenon would have facilitated the form being borrowed into Sanskrit in the nominative singular masculine, *ekas*.

In this regard, note the development of **c*- > **t*- in nearby Dravidian. Emeneau (1988: 265-66) also gives some examples of **t*- > **c*- in Dravidian. Dravidian **c* is often realized as *s* in Dravidian. And note the suggestion of Burrow (1945: 118, no. 48) that Skt. *śūrpa* 'winnowing basket' < *DEDR* 3402 Ta. *tūṟṟu* (*tūṟṟi*-). This correspondence is backed away from in *DEDR*, and listed there with question. But I would view a loan from Telugu or Kolami as probable (Te. *tūr*[*u*]*pettu*, *tūru-paṭṭu*, *tūrpiḍi*; Kol. *tūrpet*- [*tūrpett*-]).

Further, note the pronunciation in Castellano of *c* and *z* as [*θ*] in certain environments.[8]

And see OE *se*, *séo* (late *þe*, *þéo*), *þæt* > mod. Eng. *the*, *that*, cognate with OHG *der* (*de*), *diu*, *daz*, mod. Germ. *der*, *die*, *das*, Skt. *sa*, *sā*, *tat*. The English and German developments here are generally attributed to leveling, the Indo-European pronominal stem **to-, *tā-, *ti̯o-* forming only its nominative singular masculine and feminine with initial **s*- instead of **t*-, all other cases being formed originally with **t*-, – which itself may reflect the **c*- : **t*- situation in Dravidian, or pre-Dravidian if you would.

Levitt's argument was repeated in brief in Levitt (1995-96: n. cited above) in the context of a Semitic etymology for Skt. *bráhman* 'prayer …' from Semitic *BRK* 'prayer …,' most of the semantic spread of the forms in Afro-Asiatic displaying itself over time in Sanskrit sources. Levitt would see the Semitic root to merge in Sanskrit with the Sanskrit root *bṛh*-.

With regard to this latter etymology, Levitt (1995-96: 236) points out that phonologically Hebrew and Aramaic spirantize *k* in post-vocalic position. In classical Arabic *g* is an affricate. And similarly, in Ethiopian there are many cases of the spirantization and palatalization of velar plosives. There is thus evidence of the spirantization of *k* in Semitic, which is to say there is evidence of its having been uttered in some Semitic languages at least with friction of the breath against some part of the oral passage. Evidence with regard to Akkadian is insufficient.[9]

Comparably, *h* in Sanskrit is a voiced glottal or pulmonic fricative, a spirant.[10]

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[6] See Levitt (1995-96: n. cited above) and *AD* 7: 275a-83a.

[7] See *IK* 2: 1213, 1: 79, 206-7, 194, and so forth, Melville (2003).

[8] The rule is that *c* and *z* are pronounced as [*θ*] inter-vocalically or after a consonant and before a vowel. Thus, the *c* of *solución* 'solution' and *canción* 'song' is pronounced [*θ*], and the *z* of *corazón* 'heart' is pronounced [*θ*]. In Old Castellano *s* was also sometimes so pronounced due to confusion. It is said that there were about ten words with *s* in Old Castellano that popularly were so pronounced. In modern Castellano, *s* is never so pronounced.

[9] See Moscati (1964: 57-58, 37-38) with regard to these points.

[10] See Allen (1953: 20, 48-51) on the pronunciation of *h* and *-h* in Sanskrit.

The difference between a velar plosive spirantized and a glottal or pulmonic spirant may well not have been very great, and it is not difficult to understand how one might be heard as the other across language boundaries.

Such pronunciation may as well have been involved in the formation of the Sanskrit word for 'one,' Skt. *eka*, from such a form as Heb. *eḥad* 'one,' etc.

The etymology for Skt. *eka* 'one' was given in that place as one of several other possible etymologies from Semitic for Sanskrit words, such as Skt. *śiva* 'well-disposed, indicating well-being' from the Semitic number for 'seven,' *via* the early Indian predilection for dicing.[11]

It might be worthwhile noting in the present context, in passing, that in the context of the phonology just outlined, it is conceivable that Heb. *eḥad* 'one,' etc.may be a metathetical *tik* form. I am not, however, aware of any reports of **k* > **ḥ* within Semitic. In Akkadian, though, interchanges occur between *ḫ* and *k* (*e.g.*, *ḫnš* instead of the usual *knš* 'to submit'). Akkadian *ḫ* corresponds in some cases to Semitic *ḥ*, the normal Akkadian development of *ḥ* being *ḥ* > ', or zero (Moscati 1964: 40, 41).

Metathesis does occur elsewhere in Semitic in, for instance, forms for *BRK*. Cohen (1970-99/2: 84a-85a) mentions forms in *RKB*, and Akkadian has *KRB* in Akkadian *karābu* 'prayer, blessing' (*AD* 8: 192b-98b). The various forms are mentioned in Levitt (1995-96: 237-40). There are as well other such forms in Akkadian, I have been told. Also see, for instance, Cohen regarding forms in *GRH* being metathetical of forms in *GHR*; forms in *GRM* being perhaps a metathesis of *g*^{e}*mar* in some instances, and perhaps from Arabic *rağama* in others; certain forms in *BHL* being cross-referenced with *BLH*; a form in *BKR* being derived from *BRK*; forms in *HMZ* being cross-referenced with *MHZ* (1970-99/1: 184, 186-87, 2: 48a-48b, 64b-65a, 5: 422). There are other examples, as well. This is just a brief smattering of such reports.[12]

Levitt (2003) demonstrated with a lengthy list of examples that metathesis was common in Dravidian, going back to Proto-Dravidian, and even pre-Dravidian. To date, metathesis in Dravidian has been emphasized only for the Telugu-Kui subgroup of Central Dravidian.[13] In the introductory section of Levitt's 2003 article (pp. 175-80), there are also presented several related forms in Indo-European showing this process in Indo-European, as well. Given the presently argued splitting off of the different language families within the Nostratic superfamily, with Afro-Asiatic separating first and Dravidian next (see above), it is logical that metathesis would be found also in Semitic.

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[11] See the argument in Levitt (1995-96: 236-37).

[12] Fasc. 9, for *Ḥ*, published in 2010, is not available to me. Such may perhaps note some forms in which Semitic **k* > **ḥ*.

[13] See, for instance, Krishnamurti (1961: 51-55, 2003: 157-58, 162-63), Zvelebil (1990: 56). Levitt suggests that metathesis was a feature in North Dravidian, as well (1980: 44-45, 55-56 n. 27, 64 [Table III], 1989b: 7^{2}-9^{2}, 2011: 112-13, in press). And Levitt (2009: 157-59, nos. 5, 7 and 8, 10, 11) has argued that there was metathesis in Meluḫḫan words recorded in Ancient Near Eastern sources, which he interprets as being for several reasons North Dravidian. Meluḫḫa, of course, is the Ancient Near Eastern place name that archeologists today believe refers to Indus Valley Civilization.

3b. A possibly more attractive derivation of Skt. *eka* from Uralic presents itself in the Uralic data brought together by Tyler (1968: 809, no. 105), Hakola (2000: 221, no. 991), and Hakola and Assadian (2003: 126, no. 427). Tyler lists "Fi. *yksi* 'one,' Lp. *ok'ta*, Vty. *odik*, *ok*, Zr. *ōt*." The Dravidian forms listed by Tyler, I do not believe belong here. The Uralic forms listed by Hakola and by Hakola and Assadian are "F *yksi* 'one,' E [Estonian] *üks* 'one,' Mari *ikte*, Mansi *üx*, *äk* 'one,' H [Hungarian] *egy* 'one.'" To these are added Japanese *ikkai* 'once,' *ikken* 'living alone,' *ikko* 'a single thing' and Quechua *huk* 'one,' *juk*, *suk* 'one,' all leading to Proto-Duraljan **üktз* 'one.' Again, I do not believe the Dravidian forms listed by them belong here. And I do not think that the comparative evidence supports a connection of these forms with Sum. *u* 'finger.' On this account, I would also drop the listing here of Hungarian *ujj* 'finger.' As I would do, Hakola and Hakola and Assadian cross-reference Bengtson and Ruhlen's "global etymology" for *tik*, though Bengtson informs me that he would no longer consider Vty. *odik*, etc. to be *tik* forms (personal communication, dated February 3, 2012).

Languages of the Ugric subfamily of Uralic have dropped the *t* of the Proto-Uralic, or Proto-Duraljan form. Thus, Mansi *üx*, *äk* 'one,' Hungarian *egy* 'one.' Could not this be a more immediate source for Skt. *eka*? Burrow (1973: 23-27) has pointed to 23 words that demonstrate contact between Uralic and Primitive Indo-Iranian. Most are Uralic words ascribed to Indo-Iranian, such as the word for '100.' So also, the name of the Finno-Ugric Mari is said to have been borrowed from Indo-Iranian (Anon. 2009; see Skt. *marya* 'man, mortal' < PIE **meryo* [*MW* 791c, Pokorny 1959-69/1: 738-39]). But in the case of some of these words, it is likely that the Uralic words were borrowed by Indo-Iranian, such as Indo-Iranian words for 'bee' (Skt. *makṣ-*, *makṣā*, *makṣikā*) and 'goat' (Skt. *chāga*).

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Eng. *solo* < Lat. *sōlus* 'alone, sole' also presents a problem. Pokorny (1959-69/1: 884) suggests that it *probably* [italics mine] comes from an Indo-European compound **sō-lo-*, and is related to Germ. *selbst* 'alone, by oneself.' Ernout and Meillet (1985: 634b) note that it is thought to be derived from *sed-*, *sē-*, and so forth, to which there would have been added a suffix *-lo-*, *but one cannot say anything definite* [italics mine].

By the analysis here, Lat. *sōlus* would be related to words for 'one', showing a form with *l*, as the Dravidian forms suggest. The initial *s-* would be prothetic, as can be seen as well in Eng. *sun*, Lat. *sol*, Gk. *hélios* in comparison with Ta. *el* 'sun'; Eng. *skiff*, *ship*, Lat. *scapha*, Gk. *skáphē* in comparison with Ta. *kappal* 'ship, sailing vessel'; and Eng. *snake*, OE. *snaca* < *snican* 'to creep, crawl' in comparison with Ta. *nākam* 'snake' < Ta. *nakar* 'to creep, crawl.'

4. The Altaic forms.

What appears to be the original Altaic form for 'one' has been replaced in most Altaic languages by a variety of innovations. Thus, Proto-Tungus **ämün*, Manchu *emu* 'one'; compare Japanese *omo* 'paramount,' Old Japanese *omo*, Azuma *amo* ‘mother.’ Given the remarkable correspondence between Old Turkish *bir* ‘one’ at one extreme of the Altaic area and Old Japanese *Fitö-* ‘one’ and Korean *pilos* ‘beginning,’ Proto-Korean-Japanese _*pilɔ́(su)_ ‘one’ at the other end, however, even though Korean later specialized its old inherited word for ‘one’ in the sense of ‘beginning’ and replaced it in the numeral system with an innovation, it is quite safe to refer the original term reflected in these forms to the common Altaic unity (Miller 1971: 230). The Proto-Altaic form given is _*bir_.

Should we consider the initial labial glide before initial *o-* in Tamil pronunciation, we may perhaps have the origin of the initial labial of the Proto-Altaic form. Thus, colloquial Ta. *oṇṇu* is pronounced [ʷoṇṇɨ], formal Ta. *oṉṟarai* is pronounced [ʷoṇḍre] in the dialect of Tamil I studied, both going back by my analysis to a form _*ol-_ with suffixes added, in pair with formal Ta. *ōr* / *oru*. So the Dravidian and Altaic inherited words for ‘one’ may well be related.

With regard to the front vowel in these Altaic forms, whereas the Dravidian forms and what I see to be the related Indo-European forms have a back vowel, compare to the Dravidian and Indo-European forms for ‘dog’ given above, all of which contain a back vowel, Altaic _*k’ina_, Tungus _*xinada_ ‘dog,’ given with question together with Indo-European and Uralic forms for ‘dog’ by Kaiser and Shevoroshkin (1988: 314, no. 18). On the basis of the etymology for the Altaic inherited word for ‘one’ given here, we can perhaps judge such a vowel alternation to be regular.

Bengtson and Ruhlen (1994: 302-303, no. 9) in their “global etymology” for KUAN ‘dog’ give Proto-Tungus _*xina_ together with a number of Tungus forms from Manchu, Udej, Oroch, Evenki, Lamut, and Orok. Note that the Turkic form given here is Old Turkish *qančiq* ‘bitch,’ the Mongolian form given is Mongol *qani* ‘a wild masterless dog,’ and the Korean form given is *ka* ‘dog.’

Also compare Mongolian *biraɣu*(*n*) ‘calf in its second year,’ related by Vacek (2002: 260, no. 4) to Dravidian words in *DEDR* Ta. *mūri*. The related Manchu-Tungus and Turkic forms cited in this location have either ‘*u*’ or ‘*o*.’

Greenberg (2000-2002/2: 71-72, no. 155) reconstructs the Proto-Altaic form to _*bi̯uri_ ‘one,’ Proto-Turkic _*bir_ ~ _*bīr_ ‘one,’ and he provides a number of Turkic forms for ‘one’ as well as related Middle Mongolian, written Mongolian, Khalkha, and Monguor words for ‘each.’ He also gives the Middle Korean and modern Korean forms and the Old Japanese form. With question, he includes Gilyak *p‘or* ‘in the beginning.’

Greenberg also includes Indo-European forms that he sees to be related, the Sanskrit form being included by him here being Skt. *pūrva* ‘former,’ the English forms being included being Eng. *first*, *before*. The grouping of forms he lists are given in Pokorny (1959-69/1: 815) under PIE _*prŏ̄-u̯o_. This form is related within Sanskrit, though, to Skt. *puras* ‘in front, before,’ *purā* ‘before, formerly,’ and the prefix *pra-* ‘before, forward, in front, forth.’[14] Given the full semantic spread of the related Sanskrit forms, I would question Greenberg’s connection here.

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[14] See *MW* 643a. See also *KEWA* 2: 324-25, 309-10, 350-53, *EWA* 2: 157, 146-47, 173-74. These latter forms are listed by Pokorny (1959-69/1: 812-13) under PIE _*p_$_e$_res_, _*p_$_e$_ros_, PIE _*perā_, and PIE _*pro_, _*prō_.

5. Summation.

We have thus been able to reduce the number of main words used for the number 'one' in "Nostratic," "Eurasiatic," and "Duraljan" to perhaps two, a *tik* form and forms that go back to a Dravidian word for 'one.' Subsumed under the Dravidian form are the Indo-European forms and perhaps the inherited Altaic form for 'one.' Skt. *eka* 'one,' however, we have suggested is to be derived either from a Semitic form, which it is suggested may perhaps be a metathetic *tik* form, or a Uralic form, which has been considered previously to be a *tik* form. By the standing analysis for Skt. *eka*, a suffix *-ka* is added directly on to PIE **oi-* only for Sanskrit within Indo-European. This analysis is not economical, and fails to take into account an old form, Skt. *ekaka* which, when it first occurs in the late *Ṛgveda*, appears in context with parallel formations *dvaka* and *trika*.

Australian aboriginal languages considered here on account of their probable connection to Dravidian, show no number word for 'one.' Two of those words in the adjective class that do refer to 'one,' though, analyzed to be "indefinite determiners," may in fact show an ancient connection with the Dravidian words for 'one.'

Akkadian, while it carries a form for 'single, alone' related to other Semitic words for 'one,' uses a word for the number 'one' seemingly unrelated in this usage to anything outside Akkadian. So, also, the Sumerian words for 'one' are unrelated to any forms for 'one' outside Sumerian.

We have been able to suggest here forms within Dravidian that are related to *tik* forms, Dravidian seemingly not having such forms at first glance. And we have been able to suggest an etymology for the *tik* words on the basis of the Dravidian forms, deriving it from the word for 'hand' to which has been added a diminutive suffix, resulting in a signification 'finger, one,' in Dravidian 'some, a few' (*i.e.*, 'a handful').

We have also been able to suggest a competing etymology for Lat. *sōlus*, taking it from the Dravidian stem for 'one.'

The scope of our survey has as well enabled us to refine some of the standing listings of related words given by Tyler, Bengtson and Ruhlen, Hakola, Hakola and Assadian, and Greenberg, taking out Dravidian forms from Tyler and Hakola's listing, taking out the Sumerian form and the semantically similar Hungarian form from Hakola and Assadian's listing, and removing a number of entries from Greenberg's listings.

It is hoped that this survey and analysis of forms will prove to be useful to linguists in the future.

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ABBREVIATIONS

AD	=	University of Chicago, Oriental Institute (1958), (1960), (1971)
DED	=	Burrow and Emeneau (1961)
DEDR	=	Burrow and Emeneau (1984)
EWA	=	Mayrhofer (1992-2001)
IK	=	Hübner and Reizammer (1985-86)
KEWA	=	Mayrhofer (1956-1980)
MW	=	Monier-Williams (1899)
TED	=	Devaneyan *et al.* (1985-2011)

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MOTHER TONGUE
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In Memory of Aharon Dolgopolsky • **אהרן דולגופולסקי זכר לברכה**

On Nostratic ‘One’
Review article of “The Number ‘One’”
By Stephan Hillyer Levitt

Václav Blažek
Masaryk University

pp. 103-104 The Indo-European terms designating ‘one/single/first’ are not isolated (Blažek 1999d, 156):

A. IE _*H_1oi̯-no-/-ko-/-u̯o-_ ‘one’
Semitic _√ʔ-y-y_ ~ _√ʔ-w-y_: Geez _ʔayāy_ ‘aequalis, par, socius’, _ta-ʔayaya_ ‘to be equal, comparable, paired’, _ʔayaya_ ‘to be/make equal, even out’, _ʔayāwi_ and _ʔəyuy_ ‘equal’, Tigre _ʔayaya_ ‘relative, kinsman’; Syrian _ʔāwē_ (_ʔ-w-y_) ‘agreeing, in concord’ (Leslau 1987, 51). On identification of IE _*H_1_ = _ʔ_ see e.g. Beekes 1995, 148.
Uralic: Samoyedic _*oj-/*^əj-_ ‘1’ (Helimski 1986, 136).
Altaic: Tungus: Oroch _ojoke_ ‘some, one’ (TMS II, 9) // Korean _oi_, _ö_ ‘only, a single’, _oi-nun-thoŋi_ ‘one-eyed person’ (Ramstedt 1982, 134) // ? proto-Japanese _*uja_ ‘the same’ (Starostin).
Dravidian _*o-_ + _-r-/-n-/-k-_ ‘one’ (Krishnamurti 2001, 255), cf. Old Tamil _o-_ ‘to unite’, Malayalam _o-_ ‘to be similar’ (Andronov 1978b, 240: IE + Dravidian).

B. IE _*sem-/*som-/*sm̥-_ ‘one, single’
Altaic: Old Turkic _sïŋar_ ‘one of a pair’ // Written Mongolian _sonduγai_ ‘odd’ // Manchu _sonio_ ‘one, a single’, _sonixon_ ‘single, not in pairs’, _son son i_ ‘one by one, each for itself’ // Middle Korean _hannăh_ ‘one’ with the numerative _nā_ (in North Korean) meaning ‘piece, face’. All the forms can be projected into proto-Altaic _*soni̯V_. Due to assimilation to the following velar (in Turkic) or dental (Mongolian, Korean), the protoform _*som-_ is also thinkable. Similarly in Manchu, the development _sonio_ < _*somio_ is also admissible. The alternatively reconstructed proto-Altaic _*somi̯V_ ‘one (of pair); single’ is fully compatible with Indo-European _*sem-/*som-/*sm̥-_. It is legitimate to see in Altaic and Indo-European numerals for ‘one’ the forms inherited from a common proto-language (Nostratic).

C. IE _*pr̥$H_{2/3}$u̯o-_ ‘first’
Semitic _√*p-r-ʕ_: Ugaritic _prʕ_ ‘first’ (Segert 1984, 198; Gordon 1965, 471 mentions also the ordinal usage in _ym.prʕ_ ‘the first day’); Hebrew _peraʕ_ ‘chief’ (cf. German _Fürst_), Arabic _farʕ_ ‘top (of branch)’, _faraʕ_ ‘the first foal of a camel or young of a sheep’, _farʕiyy_ ‘first-born, first’ etc. (the identification _*H_2_ = _ʕ_ and _*H_3_ = _ʕ^w_ is acceptable - see Beekes 1995, 148). The third radical probably does not belong to the root (similarly the Indo-European _*$H_{2/3}$_), cf. Arabic _furr_ ‘the best (of men, camels etc.)’, _furrat_ ‘the first part’ besides _faraṭa_ ‘he was first or foremost’ (it was

already Møller 1909, 110 who compared these Arabic examples with their Indo-European counterparts).
Kartvelian: Georgian *ṗirw-el-* 'first' (Klimov 1986,198), *ṗirmšo-* (**ṗir-m-šwe-*) 'first-born' = Old Indic *pūrva-sū-* id. (Gamkrelidze & Ivanov 1984, 597, fn. 2; 878). They have been explained as borrowings from some unspecified Indo-European dialect (Klimov) or directly from the Indo-European proto-language (Gamkrelidze).
On the other hand, these forms are not compatible with Altaic **bi̯uri* 'one' with regard to regular correspondences established for the Nostratic macrofamily by Illič-Svityč (1971, 147).

pp. 104-105 If the Dravidian form of the numeral 'one' should be reconstructed as **ol-(tu)*, cf. Tamil *ol-*, Malayalam *ollu-* 'to unite', maybe also Tamil *ol* 'end', there is a promising Afroasiatic counterpart in East Cushitic **wal-/*wil-* > Saho *wili* 'one', Somali *wal* 'all', Elmolo *wol* 'together', Oromo *wol(-i)* 'together, with', Sidamo *wole* 'other' (Sasse 1982, 188-89). Since the sequence **wo-* is not attested in Dravidian, it is possible to speculate about a quite compatible starting point **wol-*.

p. 108 IE **k^u̯on-, *k^un-* 'dog' is not compatible with Tamil *kūraṉ* 'dog' etc., but with Tamil *kōṉāy* ~ *ōṉāy* 'wolf' (Andronov 1978, 334; Blažek 1989, 209: Tamil+IE).
p. 108 Tamil *illai* 'it is not' is compatible with Hittite *le* 'not' and further with Uralic **äla / *ela* '2 sg. imper. of the negative verb' ||| Semitic **ʔal-* 'no' & **laʔ* 'not' ||| Cushitic: (Central) Bilin *illā*, Awngi *ella* 'negative verb' || (East) Saho *allo* 'Nichtigkeit', Somali *-laa* 'without' ||| Omotic: Kaffa *alloo*, Shinasha *aali* 'negative verb' (Illič-Svityč 1971, 263-64, #128: Dravidian + Uralic + Afroasiatic + Hittite).

pp. 107-108 Instead of hazardous speculations about metathesis of consonants in the Dravidian word **kay-* 'hand' to get the *TIK*-correspondence, it is more serious to accept the earlier protoform **kac-/*kec-*, with regard to Kui *kaju*, *kagu* 'hand, arm; elephant's trunk', pl. *kaska*, Kuwi *kēyū*, *keyyu*, *keyu*, pl. *keska* 'hand, arm' (DEDR 2023). This starting point is quite compatible with IE **ĝ*^{h}*es-* 'hand' (Illič-Svityč 1971, 227, #80: IE + Dravidian).

p. 107 Dravidian **kil* 'few; small' (DEDR 1571) corresponds exactly to Semitic √*q-l-l* > Akkadian *qalālu(m)* 'to be light, thin, little, insignificant', Hebrew √*q-l-l* 'to be small, insignificant', Syrian *qal* 'to be light', lighten', Arabic *qalla* 'to be little, insignificant, meaningless', Geez *qalala* 'to be insignificant, easy' (HAL 1103) ||| Cushitic: (East) **qall- / *qalʔ-* > Saho *allo* 'vanity, nothingness', Oromo *qallaa* 'subtle, thin, meagre', Konso *qallaʔ-* 'thin', D'irayta *qallaʔ-* 'narrow', Burji *qallanee-* 'thin' (Sasse 1979, 22; Dolgopol'skij 1973, 196).

p. 107 Dravidian _*takk-_ > Tamil _takkiṇi, tukkuṇi_ ‘a small quantity, a little’, Tulu _takkaṇa, takkana_ ‘little’ (DEDR 3011) corresponds exactly to Cushitic: (East) _*diqq-/*duqq-_ > Somali _diiq-_ ‘to become faint, tenuous’, _diiq_ ‘faintness’, Oromo _diqqa_ ‘small’, Hadiyya _ṭuqqa_ ‘narrow’, Harso _tiiqqassa_ ‘small’ (Sasse 1979, 50) ||| Chadic: (East) Toram _ḍokoḍit_ ‘small’.

p. 109 Sanskrit _éka-_ ‘one’ reflects Indo-Aryan _*ai̯ka-_, cf. Mitanni-Aryan _a-i-ka-wa-ar-ta-na_ ‘one turn’. Any connection with Semitic _*waḥid-/*ʔa(ḥ)ḥad-(**ʔawḥad-)_ is excluded. The closest cognates of the Semitic numeral appear in Berber: Ghadames m./f. _iḍen/-et_, pl. _əḍnin_ ‘other’, _wīḍen_ ‘another’ vs. _wa-/ta-yiḍ,_ pl. _wi-/ti-yyiḍ_ ‘some, any’, Tahaggart m./f. _hăḍăn/-at_ ‘other’ vs. _wi-/ti-yoḍ_ ‘some, any’ etc. (Prasse 1972, 211-15; Blažek 1998b, 153; Kossmann 1999, 103). Related may be (Blažek 1990, 34) Chadic: (West) Hausa _ďaya_ ‘1’; (Central) Mbara _ďow_; Masa: Lame _ḍáwà_, Peve _ḍao_, Misme (Zime) _daw_ ‘1’ (Kraft); (East) Mokilko _ďey_ ‘alone’ (Skinner 1996, 57) and / or (Central) Bachama _hiḍò_, Nzangi _hıḍe_, Mwulyen _híḍò_ ‘1’ (Kraft), besides (West) proto-Bole _*mwaḍi_ ‘1’ > Bolewa _moḍi,_ Ngamo _mòodí_ (Schuh), Karekare _wáḍí_ (Lukas), Dera (metat.) _ḍumwei_ (Kraft) and (East) Mokilko _wèdè_ ‘someone’. Outside Afroasiatic, there is a promising cognate in IE _*H_2u̯i̯ed^h-_ ‘to separate’: _*H_2u̯i̯d^{h}eu̯o̯-_ ‘separated’, _*H_2u̯idheu̯ā̯_ ‘widow’ > Vedic _vidhávā-_ ‘widow’, Avestan _viδauua_ id.; Greek ἠ[F]ίθεος, Doric ἀΐθεος ‘unmarried young man’; Latin _vidua_ ‘widow’; geschiedene oder unverheiratete Frau', _viduus_ ‘deprived of husband or wife’, Old Irish _fedb_ ‘widow’, Cornish _guedeu_ id., Welsh _gweddw_ ‘widower’; Gothic _widuwō_ ‘widow’, _widuwaírna_ m. ‘orphan’, Old English _widuwe, wuduwe_, Old High German _wituwa_ ‘widow’; Old Prussian _widdewu_, Old Church Slavonic _vьdova_ id. (Pokorny 1959, 1127-28; LIV 294-95).

p. 112 Mansi _üx_, _äk_ ‘one’, Hungarian _egy_ ‘one’ were compared with Sanskrit _éka-_ ‘one’ already by Munkácsi in the beginning of the 20th century. This was discussed and rejected by Joki 1973, 75. He has collected and analyzed 222 Fenno-Ugric - Indo-Iranian comparisons. According to Honti (1993, 75f) Ugric forms without _-t-_ imply the Fenno-Ugric reconstruction _*üki_ ‘one’. Interesting is Tundra (North) Yukaghir _axte_, _ax_ ‘only, alone’ (Collinder 1940, 104).

p. 112 Latin _sōlus_ ‘alone’ is etymologizable as the _vr̥ddhi_-formation _*sōlH_2o-_ from the same base as _sollus_ ‘whole’ < _*sol(H_2)no-_ (de Vaan 2008, 572-73).

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In the article by Levitt a lot of special literature devoted to questions of numerals in various branches of the Nostratic and other macrofamilies are omitted. For any serious study it is necessary to know the data and arguments of preceding studies.

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Remarks on "The Number 'One'"

Allan R. Bomhard
Charleston, SC

This paper examines words for the number 'one' in several Nostratic daughter languages and attempts to discover connections between them, either in terms of genetic relationship or borrowing. Let us take a brief look at the fundamental proposals, ignoring the side discussions that accompany them:

1. The first suggestion is that Dravidian may contain a reflex of the global etymology **tik* 'finger, one' proposed by Bengtson and Ruhlen. According to Levitt, the Dravidian word for 'hand', which may be reconstructed for Proto-Dravidian as **kay*, "carries this form in a formative stage". And that statement is the only "evidence" given to support the proposal. Consequently, this proposal cannot be accepted as valid.
2. The second suggestion concerns words for 'one' in Indo-European. Now, there are two roots involved in the formation of the cardinal numbers in Indo-European: (1) **oi̯-* (or **ʔoi̯-*, when laryngeals are taken into consideration), with various suffixes: **oi̯-no-*, **oi̯-ko-*, and **oi̯-u̯o-* and (2) **sem-*. Every handbook, without exception, agrees with this view.

   First, Levitt claims that the first group, specifically the **oi̯-ko-* variant, may be connected with the Semitic words for the number 'one': Hebrew (m.) *ʼeḥāð*, (f.) *ʼaḥaθ* 'one'; Ugaritic (m.) *a̓ḥd*, (f.) *a̓ḥt* 'one'; Arabic (m.) *wāḥid*, (f.) *wāḥida* 'one'; Aramaic (Syriac) (m.) *ḥað*, (f.) *ḥəðā* 'one'; etc. The Proto-Semitic form is to be reconstructed as **ḥad-* 'one', which is preserved in Aramaic, in some early Arabic dialects, and in several Ethiopian Semitic languages. There is absolutely nothing in any of these forms that would suggest that they are in any way connected with Indo-European **oi̯-ko-*. A connection becomes even more unlikely when the Proto-Semitic form is used as the basis for comparison.

   Next, Levitt continues the discussion by suggesting that "Heb. *eḥad* 'one', etc. may be a metathetical *tik* form." Again, there is no evidence from within Semitic to support this claim.
3. The final suggestion to be examined here concerns the possibility that Sanskrit *eka* 'one' may be a borrowing from Uralic. That the Sanskrit form is to be derived from earlier **aika-* 'one' is beyond doubt, inasmuch as *aika* is preserved as such in a Mitanni treatise dealing with horse training: *aika-vartanna* 'one turn'. The Uralic words cited by Levitt include Finnish *yksi* 'one', Estonian *üks* 'one', Mari *ikte* 'one', Mansi *üx*, *äk* 'one', and Hungarian *egy* 'one'. These, in turn, are to be derived from Proto-Finno-Permian **ikte* or **ükte* 'one'. Considering the Mansi forms, Levitt asks "[c]ould not this be a more immediate source of Sanskrit *eka*?" Not only is this chronologically impossible, it is also impossible in terms of geography. When one pushes back further in time, there

is nothing about Proto-Finno-Permian **ikte* or **ükte* 'one' to suggest that it is the source of pre-Sanskrit (Mitanni) *aika* 'one'. Finally, we may note that it was the Iranian branch of Indo-Iranian and not the Indic (Indo-Aryan) branch that was in contact with the Finno-Ugrian languages and that the direction of borrowing was almost exclusively from Iranian into Finno-Ugrian.

Regrettably, as indicated in the above analysis, not a single one of the suggestions made in this paper is convincing.

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The Number 'One' in Nilo-Saharan

Philippe Bürgisser
Lausanne, Switzerland

In the introduction of his paper, Levitt indicates that there are about five basic words meaning 'one' in Nostratic/Eurasiatic and the so-called Duraljan languages. Quite unfortunately, the author cites only two of them, *tik* and *oor* ~ **ol-*, thus limiting comparison with those occurring in other language families.

The words for 'one' in Nilo-Saharan (NS) languages.

NS is a phylum of such time-depth that it would be surprising not to find a great number of different roots for 'one'. In the present comment, I will consider NS as defined by Greenberg {41}, but with the addition of Kadu I will discuss in more detail later.

Family	'one'	Languages. Comments	Ref.
ES: Nubian	· **weer*	General. Rilly's reconstruction seems more appropriate than that of Bechhaus-Gerst (**bɛr)*	62
ES: Taman	· **kura*	Tama, Mararit	62
	· *kan, kun*	Miisiirii, Mararit (besides *kar[r]a*)	62
ES: Nyima	· *ɲala*	Nyimang	62
	· *anda ~ and̠a* [1]	Afitti	62
ES: Nara	· *tur*	Higir. Used in front of noun	62
	· *dokku*	Higir. Used after noun	62
ES: Temein	· *k-iɗɔŋ, k-iɖɔ, k-éɗɗe* [2]	Temein, Tese, Keiga Jirru. A 'movable' *k-* is present in numerals from '1' to '4'	19
ES: E. Jebel	· *t̠aman*	Gaam	72
	· *ligidi, leedi, loodi*	Aka, Molo, Kelo	9
ES: Daju	· **nuxu*	Shatt, Liguri	12, 13
	· *nowane*	Lagowa, Nyala	12, 13, 29

	· *uŋ[g]un, nuŋgun*	Dar Daju Sila, Dar Daju Daju	29, 3
ES: Surmic	· *ɔmɔ, omoŋ* [3]	Majang (NS)	73, 39
	· *bərəne*	Mursi (SES)	68
	· *ɗɔnɛy, ɗoone, ɗonee*	Mursi, Chai, 'Suri' (SES)	29, 54, 1
	· *konaʔ, k*$^{[w]}$*onaŋ*	'Suri', Me'en (SES)	1, 73
	· *kium, k*^{y}*iman*	Kwegu, Yidinit (SES)	47, 29,
	· *adoi ~ c-oɗoi, xɔɗɛé, ɔɗe*	Murle, Didinga, Baale (SWS)	73, 29, 39
ES: W. Nilot.	· **kɛl*	Most languages	Reh in 15
	· *tök ~ tok*	Dinka	26, 15
	· *dek*	Lango (Luo-Acholi branch)	15
ES: E. Nilot.	· *tu ~ tɔ*	Bari	56, 15
	· **-pe[y]-*	pTeso-Turkana	15
	· **-bo-*	pLotuko-Maa	15
ES: S. Nilot.	· **agi, *agalɛɛl*	pDatooga	15
	· **akɛɛŋkɛ* [4]	pKalenjin	15
Kuliak	· *kɔna*	Ik	76
	· *ɛd-ɛs* [5]	Soo	28
	· *nardok*	Nyang'i	73, 29
Berta	· *mʊʊŋk'u, mənnək'u, ménémgop*	U, F, G1	7
	· *ɗuk'unuŋ, ɗukoni, ɗuk'ʊnʊ*	M, S, dialect in SIL paper	7, 69
Kunama	· *ella*	Marda	10
Foran	· (1) *tɔk* ; (2) *diik*	Fur	34, 48
	· *wok ~ wʊk ~ ʔok*^{h}	Amdang	34, 77
Maban	· **to-* + various suffixes:		70
	• *tɔɔ ~ tek* [6]	Maba, Kodoi	35, 36
	• *too, tyom* (a), *tiilo* (b)	Masalit. (a) *vs* (b): - *vs* + n.	35, 36
	• *tuwa, tuwni ~ dowai, t*^{h}*uʔal*	Aiki, Kibet, Daggal	35, 36, 55
Mimi-N	· *ul-un, ul-*		70
Mimi-D	· *deg*		70
Koman	· **ɗe*	Komo, Uduk, Gule, Opo	6

	· *seendo ; ʔasɛn, ʔasɛl ; sene*	Kwama (various dialects)	6, 75, 53
Gumuz	· **meta[m]*	Sai, Sese, Gojjam, Kokit	5
	· *mital*	Gojjam (besides *meta[m]*)	5
Saharan	· *tilo, tullo < *tuliCo ?*	Kanuri, Kanembu	14, 50, 12
	· *laska < *laK-Sa ?*	Kanuri	14, 50, 12
	· *fal* [7]	Kanuri	14, 50, 12
	· *turon ~ tron < *turono*	'Tubu'-Teda-Daza	14, 12
	· *nɔkkɔ, lakoi*	Beria, Zaghawa	14, 12, 49
	· *saŋ*	Berti	14, 12, 59
Songay	· **foo* [8]	Timbuktu, Djenné, Gao, TSK	42 - 45
	· *foloŋ* [9]	TSK (besides *fɔɔ*)	45
CS: SBB	· **kala* [10]	Boyeldieu *et al.* distinguish four seemingly unrelated forms. Gula Mere, Yulu, etc.	34, 25
	· *kərə, kare, kɛri*	Baka, Sara languages	34, 25, 51
	· *kotu* [11]	Bongo	34, 25
	· *kɛɗɛ* [12]	Bagirmi	34, 25
CS: MM	· **alo*	General	23
CS: MAS	· **kana*	Mangbetu, Asua	73
CS: KR	· *ʔbal[a] ~ ɓälã*	Gbaya	73, 29
CS: MEF	· *reli*	Mamvu	46
	· *edi, eɗi*	Efe, Mvuba	29
CS: LND	· *aɗi, aéɗi*	Lendu, Ngiti	67, 29
Shabo	· *inki ~ enka ~ iiŋki*	does Shabo belong to NS?	40, 67

ES, East Sudanic. Nilot., Nilotic. TSK, Tondi Songway. CS, Central Sudanic. SBB: Sara-Bongo-Bagirmi. MM: Moru-Madi. MAS: Mangbetu-Asua. KR, Kresh. MEF, Mangbutu-Efe. LND, Lendu-Ngiti. n., noun.

Rilly has identified a subgroup within East Sudanic he calls SON (Soudanique Oriental Nord) which includes Nubian, Taman, Nyima, Nara and, tentatively, Meroitic {62}. Using a sound methodology he has reconstructed more than 150 pSON roots with little overlap with those proposed either by Bender {8} or Ehret {38}. It is worth noting that he was unable to reconstruct a common pSON root for 'one'.

Blažek {12} attempts to minimize the number of Saharan basic roots in the following way. pKanuri _*tuliCo_ would be cognate with pTubu-Teda-Daza _*turono._ The 1st element of pKanuri _*laK-Sa_ would be a reflex of the same proto-root as Beria *nɔkkɔ* and Zaghawa *lakoi*, while the 2nd element could be related to Berti *saŋ.* Alternatively, the latter may be cognate with Beria *sogo-di* 'ten' {49}.

Here follow some semantic notes relative to the Table above: **1**, also 'alone' in the Mandal Hills dialect {62}; **2**, cf Temein *[ɛ]kidɔŋ* 'alone'; Keiga Jirru *édɗeŋ* 'other' {19}; **3**, cf Murle *uuma* and Majang *ɔɔm* 'other' {73}; **4**, cf pKalenjin _*akɛ_ 'other' {15}; **5**, also 'to be alone' {28}; **6**, also 'other' {35}; **7**, could be related to *fəle-ðu* 'to show, point at' (Manga dialect) {50}; **8**, also 'same', 'other', 'alone', 'a certain' {44}; **9**, also 'only, single, sole' {45}; **10**, also 'alone' {25}; **11**, also 'a certain' {25}; **12**, also 'a certain' or 'other' {25}.

Before going further into discussion, I would like to emphasize that Václav Blažek, a specialist of numerals in many language families, has written three papers about NS numerals {12, 13, 15}. I have included a significant number of his comparisons and ideas in what follows.

The *tik* and similar forms (Levitt). The occurrence in NS of such world-wide forms has been described {11}. The above Table depicts their presence in East Sudanic (Nara 2nd form, Dinka, Lango), Fur, Maban, and Mimi-D. Forms like those found in Bari or Koman may be suspected to belong here after the loss of the final velar (Bari) or its weakening to */ʔ/* (Komo *ɗɛʔ*, Uduk *ɗeʔ)*. Finally, *tik* and the like may hide in certain compounds (Nyang'i of Kuliak and 2nd form of Berta. This hypothesis is supported by Bender #199 {8}).

However, let us put all these forms side by side: *dokku*, *tök ~ tok, dek, tɔk, diik, tek, deg; tu ~ tɔ, ɗɛʔ, ɗeʔ; nar-dok, ɗuk'-unuŋ.* The result suggests that we are in the presence of several roots not genetically related. There is a heterogeneity regarding the vowel (front *vs* back) and, more importantly, regarding the initial dental (voiced *vs* unvoiced, simple plosive *vs* implosive). The best illustration of this is the coexistence of two forms in Fur: *tɔk* on the one hand and *diik* on the other. Ehret {38} mentions that *diik* 'one' has a plural *diŋa* that means 'some'. This indicates that initial *d* in *diik* is part of the root and not the Fur singular prefix. For the *'tik'* forms, Ehret reconstructs no less than three pNS roots, _*_$t^{h}wak^{h}$ (#829), _*teek_ (#776) and _*ɗeh_ (#186) {38}. Interestingly, he considers Berta UMF *[a]deego* 'first' {7} a reflex of _*teek._

Similar forms are also met in NS with meanings often related semantically to 'one'. Thus, for pTaman 'ten', Rilly reconstructs both _*mer_ (pSON _*mer_ = 'body') and _*tok_, with as reflexes Tama *merr ~ mɛr ~ mir* and Mararit *tok ~ tɔk* {62, 22}. Miisiirii *martik ~ mɛrdik* (censored for French readers!) could be seen as a combination of both. Still for 'ten', we have Maban *ɔtuk*, Masalit *utuk*, Aiki, Kibet and Murru *[ʔ]tuk* {36, 55}. Boyeldieu *et al.* reconstruct CS pSBB _*dɔgɔ_ 'ten' {25}. Finally, *dooko* means 'all' in Murle (Surmic) {73}. As for Kadu, Bender adduces Mudo (Tulishi dialect) *amɗeega* 'only' or 'alone' {8} and Talla *ɗɔk* 'all' {8}, while *amɗɛ[ɛ]ga* means 'ten' in Yegang {66, 61}.

The Dravidian form *oor* ~ **ol-* (Levitt). One could cite here pNubian **weer* > Nobiin *wee[r]* ~ *weel-* 'one' {62}, or Mimi-N *ul-* {70}. Afitti (Nyima) *ara* 'arm' {30}, Sai *ela* ~ *era*, Kokit *ɛla* (Gumuz) 'hand' {5}, pKalenjin (South Nilotic) **eR* 'arm' {63} might also be mentioned. Levitt proposes a shaky cognation between pTurkic **bir* 'one' and Dravidian *oor* explained by the pronunciation of the latter in colloquial Tamil. A similar mechanism could be put forward to account for the development of Amdang (Foran) *bari* 'finger' {77} or Kunama *biile* 'only, each other' {10} from a pNS root such as **ari* or **ile*.

I do not consider seriously a genetic connection between any one of these NS words and Dravidian *oor* ~ **ol-*. By the same token, any connection between Dravidian *oor* and pTurkic **bir* must be supported by a more convincing hypothesis.

Leaving Levitt's views aside, several other roots can be recognized in NS.

The root *taman* and the like. With the meaning 'one', this root is met only in Gaam (E. Jebel). However, with the meaning 'ten', it is widespread: as *tomon* in Mursi or Kwegu (SE group of Surmic) {68, 47} and in Lango (W. Nilotic) {15}, as **tɔmɔn* in pTeso-Lotuko-Maa (E. Nilotic) {15}, **taman* in pKalenjin (S. Nilotic) {63}, *tomin* in Ik (Kuliak) {76}.

According to Bender {8} and Blažek {12, 15}, this root is found outside NS, in Cushitic of Afrasian (e.g. Beja *tamin* ~ *tamun*, pEast Cushitic **tamman*) and possibly in Mande of Niger-Congo (e.g. Soninke *tamu)* where it also means 'ten'. Its origin is therefore undetermined.

In Nubian, there are such forms as Kenuzi-Dongolawi *dimin*, Old Nubian *dimed-*, Nobiin *dime*, Birgid *tummun* ~ *timmun*, Midob *timmiji* ~ *timizi* for which Rilly reconstructs pNubian **di-mer[n]* < pSON **adi-mer* 'body of the hands' = 'ten' {62}. The devoicing of pNubian **d-* in Birgid and Midob is regular {62}. The etymology is interesting, but a genetic relationship with *taman* is questionable.

The root *tur* and the like. As shown in the Table, *tur* is one of the two ways of expressing 'one' in Nara. According to Blažek {12}, Kanuri **tuli-Co* (=**tuli-no* ?) and 'Tubu'-Teda-Daza **tur-ono* could also be reflexes of a same proto-root. This root may have a much greater extension if we consider such meanings as 'finger' (Fur *tɔri,* W. Nilotic Burun *tuli)* {73, 41} and 'five' (Murle *tur*, Majang *tul*, the Surmic proto-root for 'five' according to Fleming) {73, 39}. Ik *tud*^{e} ~ *t*^{h}*ud* {76} and pMaban **tor* {36, 55} 'five' can also be added to the list. Dinka *ṯiäär* 'ten' {26} differs by the vowel and may just be a look-alike. The same may be true about Surmic Mursi *tértér*, Chai *ṯérṯér* {68, 54} and Baale *tertere* {39} 'fingernail'. Further discussion may be found in Blažek {12}.

A root *kVna* ? Such a word occurs (Table) in Miisiirii and Merarit (Taman), 'Suri' and Me'en (Surmic), Ik (Kuliak), Mangbetu and Asua (MAS of CS). Some or all of them may be related to pE. Nilotic **-kaén-* {Vossen, cited in 57} and Kunama *kona* {10} 'arm, hand'. Other possibilities for cognation include pTeso-Turkana (E.

Nilotic) **kan[i]* {15} 'five', as well as words that mean 'other' in Chai of Surmic *(konno)* {54}, and in the W. Nilotic languages Kurmuk *(koon)* {2} and Burun *(ɔkan)* {73}.

A root **kel* has been identified by Blažek {15}. Reflexes with the meaning 'one' can be found as **kɛl* in pW. Nilotic and **kala* in SBB of CS. Supposing that initial *k* represents Greenberg's 'movable' prefix {41, 38, 15}, Kunama *ella* and pMM of CS **alo* could belong here. Sai *ela ~ era* and Kokit *ɛla* (Gumuz) 'hand' {5} are surely better placed here than under Dravidian *oor ~ *ol-*.

A root **fVl.* Blažek notes the close similarity between Kanuri *fal* and Songay forms such as TSK *foloŋ* 'one'. To these we may perhaps add pNyima **fal-* 'fingernail' {62} as well as Murle (Surmic) *falak* 'fingernail' and *fəleyit* 'claw' {73}. Still in Surmic, Majang *polpol* 'finger' {74} may be considered too.

A root **iɗe* and the like characterized by the presence of a voiced implosive dental occurs for 'one' in Temein proper and Keiga Jirru, Surmic (Murle, Didinga, Baale), Koman, and in CS, i.e. Bagirmi (SSB, with 'movable' *k-*), Mvuba (MEF), Lendu and Ngiti (LND). The Koman root **ɗe* has already been mentioned hypothetically in the *tik* section. Kuliak Ik *ɗoɗ-[ɛs]* {76} and Soo *ɗɔɗ-[ʊg]* {28} 'to show, point at' could find their place here if they result from reduplication; Nyang'i has *daŋ* {73}, which may be a misreport for **ɗaŋ*.

Other roots in brief.

- ES: pTaman ****kura**.* → Nyimang *kwɛrɛn* 'all' {19}, Fur *koroŋa* 'all' {73}, Ik *k^{h}orok^h* 'finger' {76}, Dar Daju Daju *kokor-* 'finger' {4} (Ik *k^{h}orok^h* may not belong here; according to the Tables of sound correspondences in the Appendix, one would expect *k^{h}odok^h)*
  and/or
  CS: SBB ***kərə**, **kare**, **kɛri**.* → Fur *keer* 'other' {48}, pMaban **kara* 'hand, arm, finger' {70}

- ES: Afitti (Nyima) ***anda** ~ **anḏa**.* → 'Tubu' *indina* 'all' {14}, Daju (general) *ande ~ ante* 'hand' {24}; Asua *andeto* 'fingernail' {73}. For additional possible connections related to 'hand, arm', refer to pNubian 'five' in Blažek {13}. Note however that Afitti 'hand, arm' *a[a]ṯa* differs from *anda ~ anḏa* 'one' in the same language {62}

- ES: C. Jebel ***ligidi**, **leedi**, **loodi**.* → Tama *kiligit* (if *k-iligit ?)* 'finger' {22}

- ES: Mursi (Surmic) ***bərəne**.* → Amdang *bari* 'finger' {77}

- ES: Kwegu, Yidinit (Surmic) ***kium**, **k^{y}iman**.* → Chai *kumulo* 'all' {54}, Kwama *kum ~ k^{h}uk^{h}um* 'all' {53, 75}, Kunama *ikima ~ ikina* 'fingernail'

{10}

- ES: pLotuko-Maa ***-bo-**. → Fur *ba* 'only' {48}, Soo *iɓɛʔ* 'alone' {38}, Kwegu *bua* 'arm, hand' {39, 47}, Murle *éɓa* ~ *ɛɓa* 'arm' {39}, Berta S *bua* 'arm, wing' {7} (cf Baruun be Magtole *bʷoi* 'wing' {52}), Songay **boy* 'fingernail' {42, 43, 44}

- Berta U, F, G1, G2 ***mʊʊŋk'u**, **mənnək'u**, **ménémgop**, **mənəmgo***. In these four Berta dialects, lower numbers bear a *mV-* prefix. The stems are therefore *-ʊŋk'u (< *-ʊnV[m]k'u* ?), *-[ə]nnək'u (< *-ənəmk'u* ?), *-némgop, -nəmgo* and are very likely cognate with Daju Shatt *nuxu*, Liguri *nohorok*, Lagowa and Nyala *nowane*, Dar Daju Sila *uŋ[g]un*, Dar Daju Daju *nuŋgun*. To these Blažek adds tentatively the 1st element of pKanuri **laK-Sa*, Beria *nɔkkɔ* and Zaghawa *lakoi* as well as C. Jebel *ligidi* mentioned previously {12}

- Amdang (Foran) ***wok** ~ **wʊk** ~ **ʔokʰ***. → Mabaan *waak-* 'all' {21}, pTama **[a]wei* 'hand, arm' {62}, Nuer *wuɔk* 'arm' {78}, pSongay **woy* 'ten' {42, 43, 44, 45}

- Kwama (Koman) ***seendo** ; **ʔasɛn**, **ʔasɛl** ; **sene** (= ***sen-** ?)*. → Daju Shatt *aséŋgé*, Lagowa *assince*, Dar Daju Sila *asiŋge*, Eref *asaŋge* 'hands (suppletive pl.)' {24} as well as pDaju **asiɲ* 'ten' {Thelwall in 13}; pNubian **suŋ-* ~ **sun-* 'fingernail' {62}

- Gumuz ****meta[m]**, **mital***. → pDaju **madək* 'five' {Thelwall in 13}, pLotuko-Maa **-miet-* 'five' {15}, pS. Nilotic **muut* 'five' {63}, pMM **mudî* 'ten' {23}, and either pKoman **mbit'* 'hand' or **mbus'* 'five' (Uduk reflexes *meɗ* and *muud̲ɛd̲*, respectively) {6}

- CS: SBB ***kotu***. → Daju Shatt *kudduk* 'all' {73}, Molo (C. Jebel) *a kiata* 'other' {73}.

- CS: Gbaya (Kresh) ***ʔbal[a]** ~ **ɓälã***. → Berta C *bul* 'to show' {7}, Kunama *biile* 'only' {10}, Gaam *bulḏi[g]* 'finger' {72}

Unlike what I did in a previous paper {27}, I did not make use in the present study of the NS sound correspondences and pNS reconstructions published either by Bender {8} or Ehret {38}. At the present time I do not consider them reliable and I agree with the sharp criticism expressed by Rilly {62}. Sound correspondences among NS families are still to be worked out completely, a task that may prove impossible, if Blench is right {20}. As a consequence, etymologies presented here may contain look-alikes and borrowings in addition to true cognates.

A closer look at Kadu languages

A majority of scholars such as Schadeberg, Stevenson, Bender, Blench or Rilly believe that this small family is a member of the NS phylum {64, 71, 8, 17, 20, 62}. However Ehret and Dimmendaal remain unconvinced {37, 33}.

Number ‘one’ in Kadu languages has the following forms:

Group	Language 1	Language 2	‘one’	Ref.
Western	Yegang	Keiga, Kayigang	*tʊʊl, ʈol, ʈʊʊl*	66, 16, 61
Central	Mudo	Tulishi	*ŋgʷɔʈɔ*	18
	Mudo	Kamdang	*kɔttɔk*	66
	Miri	Miri	*ŋɔttɔk*	66
	Talla	Kadugli	*ŋŋattɔk*	66
	Tolibi	Katcha	*uŋgɔʈʈɔ, ŋgɔtɔ*	66, 58
	Kufo	Kanga	*ŋɔttɔ*	66
	Sangali	Tumma	*ŋgɛttɔ*	66
Eastern	Krongo	Krongo	*éŋwa, t-yʊŋwa*	66, 60
	Talasa	Tumtum	*iŋinɔɔnɔ*	66

1: Language names used by Schadeberg {66}
2: Language names used by Blench, following Stevenson {16, 58}

In contrast to numbers ‘two’, ‘three’ and ‘four’ which are pan-Kadu, there are three different roots to express number ‘one’ with a distribution that corresponds perfectly with Schadeberg's division of the family into three branches {65}.

The Western group form is *tʊʊl, ʈol, ʈʊʊl*. Note that Schadeberg and Reh report a different initial consonant (*t* vs *ʈ*), while these two authors generally agree. It is tempting to consider it cognate with the NS *tur* form mentioned previously.

The Central group form. Alternation between *k* ~ *g*, *ŋ* and *ŋg* at the beginning of the word as observed in ‘one’ is not unusual. Here follow two examples: (1) ‘tongue’, Kufo *ŋɔdɔ*, Tolibi *ŋgɔdɔ*, Krongo *cɔɔdɔ* < **kyɔɔdɔ*; (2) ‘warm’, Yegang *ŋudani*, Miri *agudaana* {66}.
A *-k* ending as present in Mudo (Kamdang), Miri and Kadugli ‘one’ is frequently, but irregularly met in Yegang, Mudo, Kufo, Miri and Talla, but never in Tolibi, Sangali, Krongo or Talasa (with the possible exception of ‘to blow’ and ‘stone’). This is shown below:

Language {66}	'bark' (n.)	'bird'	'black'	'to blow'	'to lie	'nose'	'rope'	'stone'	'to sit'	'tail'	'one'	'you' (pl.)
Mudo	-k	-	-k	-k	▨	-k	-k	-	▨	-k	-k	▨
Yegang	-k	-k	-k	-	-k	-k	-k	-k	-k	-k	▨	-
Kufo	-	-	-	▨	-	-	▨	-	-	-	-	-
Miri	-k	-	-k	-	-k	-k	-k	-k	-k	-	-k	-k
Talla	-k	-	-k	-k	-k	-k	- [k]	-k	-k	-	-k	-k
Tolibi	-	-	-	-	-	-	-	-	-	-	-	-
Sangali	-	-	-	▨	-	-	-	-	-	-	-	-
Krongo	-	-	-	-ji	-	▨	-	-	-	-	▨	-
Talasa	-	-	-	-gɛ	-	▨	-	-gi	-	-	▨	▨

- *-k* : presence of the final velar plosive
- - : absence of the final velar plosive
- grey cell : no data available or root not attested in this language

Two hypotheses can be put forward to explain this ending: (1) it may be the last remnant of a general loss of final root consonants in Kadu, with *k* proving slightly more resistant to deletion than any other consonant; (2) since this fluctuating ending is limited to *-k* (and *-ŋ* in Yegang and Krongo), it may rather be an old suffix of unknown function. This is not a singulative marker because it persists in the plural.

Considering the first hypothesis true, some scholars have concluded that *ŋ[k]ɔttɔk* could be segmented *ŋ[k]ɔt-tɔk* or *ŋ[k]-ɔttɔk* (the 'movable' prefix *k-* is attested in Kadu), the 2nd part being the Kadu version of *tik* {71, 8, 15}. However, if the second hypothesis is the right one, this interpretation would be wrong.

There is another interesting point regarding *ŋ[k]ɔttɔk*. One may wonder whether the geminated *-tt-* could not derive from **-rt-* by assimilation. Let us look at the suppletive plural of 'dog' and at 'near'. As for 'dogs', we have Mudo and Talla *ittiini*, Tolibi *[ét]téénéé*, but Yegang *artéénè*; and for 'near', we have Mudo *ɛttɛ*, Miri *maa-gattɛ*, Talla *kattɛ*, Tolibi *agaṱṱɛ*, Krongo *afii-gatté* and Talasa *afɛɛ-gattɛ*, but again Yegang *agartɛ*. Thus *ŋ[k]ɔttɔk* may represent in fact **ŋ[k]ɔrtɔk*. A second argument comes from an internal analysis of Mudo numerals, in which 'one' is *kɔttɔk*. 'Ten' is *tɔɓɓa* and 'nine' *kɔrdɔɓa*; 'eight' is *atta* and 'seven' *kɔrdata*, suggesting the existence of an element *kɔr-* 'one (to be substracted from...)'. In this view, pKadu 'one' could look like **ŋ[k]ɔr-tɔk* or **ŋ[k]-ɔrtɔk.*

**ŋ[k]ɔr-* could well be compared with pTaman **kura* and/or CS: SBB *kərə, kare, kɛri* 'one' discussed above and **ŋ[k]ɔr-tɔk* could represent 'finger-one'. 'One-finger' would seem less likely since, in NS, *tik* or *tɔk* does not refer to 'finger', 'hand' or 'arm'.

A closer look at Mudo 'seven' *(kɔrdata)* as compared with 'eight' *(atta)* however may lead to the conclusion that the element 'one' in 'seven' is actually **kɔrd-*. In 'nine', the *d* of *kɔrd-* would have become inapparent due to fusion with the *t-* of *tɔɓɓa* 'ten'. By adding *-k* viewed as a suffix plus a linking vowel, we get **kɔrd-ɔk* > *kɔttɔk* 'one'.

The Eastern group form. In this group counting is performed by the use of numbering verbs. Thus, in Krongo, the prefix *t-* is the infinitive marker {60, 61} and *t-yoŋwa* means 'to be one, to be alone' {60}. In the closely related Talasa, *iŋinɔɔnɔ* is probably to be analyzed as *iŋinɔ-ɔnɔ* 'to be alone' with *-ɔnɔ* being a detransitivizer verbal suffix {58, 60}.

Potential NS cognates include Dar Daju Sila *uŋ[g]un* 'one' discussed above, Fur *-oŋa* 'hand, arm' {48}, Ngambay (CS: SBB) *ŋgõn-jé* (*jé* = 'arm') and cognates in other Sara languages {51}. Perhaps Mabaan (W. Nilotic) *ŋwumnu* (pl. *ŋwumgu)* 'arm' should also be considered {21}.

For *tʊʊl, t̪ol, t̪ʊʊl* and *kɔr-*, I have tried to establish sound correspondences between Kadu and the NS languages involved (see the Appendix). They have to be viewed as highly provisional. Words showing discrepant correspondences have been put in brackets. Kadu offers some specific difficulties for establishing etymologies. For example there is no phonemic contrast between voiced and unvoiced consonants. Moreover, there is only one labial plosive */ɓ/*, with */b/* being no more than an occasional variant; in contrast, there are three dental plosives (*/t/ = /d/, /t̪/ = /d̪/,* and */ɗ/)* with irregular intra-Kadu correspondences; and only one velar plosive *(/k/ = /g/)* {66, 60, 61}.

Phonetic notation

IPA symbols were used with the following exceptions: *c* represents IPA */c/*, */cç/* or */ʧ/; j* represents IPA */ɟ/*, */ɟj/* or */ʤ/*. And *y* corresponds to IPA */j/*.

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Author's address
Philippe Bürgisser
Av. Montagibert 18
CH-1005 Lausanne
Switzerland
philippe.burgisser@bluewin.ch

Appendix

Sound correspondences between Kadu non-initial *-r-* and NS

Family	Language	"two"	"name"	"brother"	"day"	"urine"
Kadu	Mudo	*k-aara* [1]	*ɛrɛ* [2]	*iriyɛ* [3]	*ʊʊrʊ* [4]	*sʊʊrʊ* [5]
Nara	Higir	*are ~ ari*	*aada < *aara*	-	-	-
Taman	Tama	*wari < *ori ?*	-	*ɛŋ ɛrɛ*	*uru*	-
Taman	Mararit	*wari, wɛrrɛ*	-	*ŋar-*	-	-
Nyima	Nyimang	*ar[m]ba*	*aŋɛr*	-	*ŋwɔr, ŋaɽa* [10]	-
Daju	Dar Daju D.	-	-	*(ed-e)*	-	-
Surmic	SES	-	*roŋ, roŋi ?* [8]	-	-	*ʃorre* [11]
Surmic	SWS	-	-	-	*k-ɔr,* etc.	-
W.Nilot.	pW.Nilot.	**[a]riou*	**rɩn*	-	-	-
Kuliak	Ik	-	*ɛd*	-	*odo*	-
Foran	Fur	*j-aaro* [6] *??*	*k-ario*	-	-	-
Foran	Amdang	-	-	*ʔarʊl, ʔarun ?*	-	-
Maban	pMaban	-	-	**-ir*	-	-
Saharan	Kanuri	-	-	-	-	*collo*
CS	SBB	*roo, naro, rumo* [7] *?*	*iri, ri* [9]	-	-	-

1, pan-Kadu (Yegang *ariya*, Kufo *[nd]ɛɛra*, Krongo *yaarɩa*, Talasa *ɛɛrya*, Sangali *ɛɛrɛ*, all others *ɛɛra*) {66}

2, pan-Kadu (Yegang *ɛrɛ*, Sangali *[ɛ]aara*, Krongo *yaari,* all others *ɛɛrɛ*) {66}

3, Yegang *ariyɛ,* Miri *ar[r]e*, Talla *rɩ*, Tolibi *ɔrɛ* {66}

4, Yegang *ʊrʊ*, Kufo *alb-ʊʊr-ni* (cf "night" *alb-ɔɔsi-ni)*, Miri *ta-[g]uuru*, Talla *uuru*, Tolibi *ooro*, Krongo *ʊʊrʊ,* Talasa *ʊrʊʊni* {66}

5, Yegang (no data for Mudo). Tolibi *k-isɔɔrɔ,* Krongo *eesooro* (pl.) {16, 58, 60}

6, "twin"; 7, Fongoro, Sinyar, Modo; 8, Kwegu, Me'en; 9, Baka, Ngambay; 10, Mandal Hills dialect, "day (24 hrs)", "day (light)"; 11, "Suri".

As for Nara *wari < *ori* and *aada < *aara*, cf Rilly {62}.

Ref.: Nara, Tama, Mararit, Nyimang {62}; Dar Daju Daju {4}; SE Surmic {47, 73, 1}; SW Surmic {39}; pW. Nilot. {31}; Ik {76}; Fur {48, 38}; Amdang {77}; pMaban {36}; Kanuri {50}; SBB {34, 25}.

Sound correspondences between Kadu (initial) *[-]k-* or *[-]g-* and NS

Family	Language	"person"	"lion"	"navel"	"knee"	"spear"	"to scratch"	"salt"	"warm"
Kadu	cf notes	*kəyɔ* [1]	*tin-kaamu-k* [2]	*kullo* [3]	*kuugi* [4]	*kanda* [5]	*agɔra-ana,* *agɔrdɛ* [6]	*kaɗal* [7]	*ŋuɗa-ni* [8], *aguɗa-ana* [9]
Taman	Tama	-	-	*gɔlɩ*	-	-	*gurutuwi*	-	*kedi ?*
Taman	Mararit	-	-	*hʌgi* [12]	-	-	-	-	*keydi, kəyiri ?*
Nyima	Nyimang	*kwai* [10]	-	*kʷuuri*	-	-	-	*kwɛɖ̠ile*	-
Daju	Dar Daju D.	*ki-*	*kems-* [11]	-	-	*galad-*	*koroɲɟ*	-	-
Surmic	SES (Mursi, Chai)	-	-	*gulu, gulɗu*	-	-	-	-	-
Surmic	SWS (Murle)	-	-	-	-	-	-	-	*kota* [18]
Kuliak	Ik	*eakʷ ?* [10]	-	*gud* [13]	*kɔɔk* [13]	-	-	-	-
Foran	Fur	-	-	-	-	-	*kirgiɲ- ?*	-	-
Foran	Amdang	-	-	-	-	-	-	-	-
Maban	pMaban	**ka-*	-	-	-	*gɛndɛ* [15]	-	-	-
Saharan	Kanuri	*kwa ?* [10]	*ŋgam*	-	-	*kənja-* [16]	*(kar-ðu)*	-	*gətto* [19]
CS	pSBB {25}	-	-	-	**k - ʄ -*	-	**ugu*	**kaʈa*	**kaɖV ~ *kaɗV* [20]
CS	SBB	-	-	-	*kukwiye* [14]	-	*kər* [17]	-	-

1, Mudo. Yegang & Talasa *kɔ,* Miri *ka*, Krongo *kaau* (pl. Kufo *ku-du*, in all others **ka-du[-],* hence Kadu) {66}
2, Yegang. Tolibi *ʈi-gamo,* Krongo *tɩ-gaamu* {16, 58, 60}
3, Yegang. Tolibi *kullu* {16, 58}
4, Miri. Talla *nigɔɔgi*, Tolibi *kuugɛ*, Kufo *nʊ-ŋgi* (suppl. pl.) {66}
5, Mudo. Miri *kanɖa*, Talla *ganda*, Tolibi *kanʈʰa*, Krongo *tiŋ-ganda*, Talasa *kanda* {66}

6, Tolubi. There are two forms of this verb in Kadu, one with the detransitivizer suffix *-ana*, another with the ending *-dɛ*. Yegang *gwaara*, Miri *aagurtɛ-k*, Talla *aagɔrdɛ-k*, Krongo *agura-ana*. Perhaps the Yegang second form *kɔrkɔdɔ (< *kɔkɔrdɔ ?)* belongs here too {66}
7, Yegang. Mudo *tɪŋɪɗa,* Miri *tiŋadala (= tin-gadala),* Talla *taŋaɗala*, Tolibi *tɛŋɛdala* {66}
8, Yegang {66}
9, Miri & Tolibi {66}
10, "man"; 11, "leopard"; 12, initial *h-* in Mararit is sometimes not etymologic, i.e. *hʌgi < *[a]gol-* {62}; 13, Soo, *kɔɔk* means "shinbone"; 14, Bongo {34}; 15, "branch" in Murru; 16, *kənja-yindi* "branch, fork" (*yindi* = "two"); 17, Ngambay; 18, "to burn"; 19, "to warm oneself"; 20, "sun"
Ref.: Tama {62, 22}; Mararit, Nyimang {62}; Dar Daju Daju {73, 24, 4}; SE Surmic {68, 54}; SW Surmic {73}; Ik {76}; Soo {21}; Fur {48}; pMaban {66}; Murru {55}; Kanuri {50}; Ngambay {51}.

Sound correspondences between Kadu non-initial *-l-* and NS

Family	Language	"bird (big)"	"(lower)leg"	"ashes"	"black"	"dry"	"warm"
Kadu	cf notes	*kɔlɔ[ŋ]* [1]	*tooli* [1]	*ndɔɔlɔ* [2] *(= n·dɔɔ·lɔ)*	*aamaala* [3]	*aafala* [4]	*elala* [5]
Nara	Higir	-	-	-	-	-	*war* [21]
Surmic	SES	*goraa* [6]	*door* [9]	*daari* [12]	-	-	*(laluŋa)* [22]
Surmic	SWS	*(kaalɛ-ji)* [7]	-	-	-	-	-
Surmic	NS (Majang)	-	-	*tuuli* [13]; *(tuur)* [14]	-	*palʸkn ?*	-
W. Nilot.	Mabaan	*gwoli* [8]	*tuala*	*tollo* or *tol* [15]	*mielo* [17]	-	**lɩɛl* [23]
Kuliak	Soo	-	-	-	*(iman), (imɛn)* [18]	-	-
Foran	Fur	-	*taar* [10]	*turil ?* [16]	-	*wori* [19]	-
Foran	Amdang	-	-	*tɑwɑr* [16]	-	-	-
Maban	pMaban	-	-	-	-	*fɛrɛ* [20]	-
Saharan	Kanuri	-	-	-	-	-	*(war-ðu ~) wal-ðu* [21]
Saharan	"Tubu"-Teda-Daza	-	*(tuli)* [11]	-	-	-	*war* [21]

1, Krongo {66, 60}
2, Krongo & Talasa {66}. Reh spells *ǹdòolò* {60}. Possibly cognate with Mudo "cloud" *ǹdulûk/tulûk* and/or "sky" *ndullúk/tullúk* {66}

3, Sangali {66}
4, Tolibi {58}, cf also "dry season" Tolibi *falɛ* {58}, Krongo *faliŋ* {60}
5, Mudo. Krongo *alaala,* Talasa *ŋ-alaala* {66}
6, Kwegu "to fly"; 7, Baale; 8, "big black bird"; 9, Kwegu "thigh"; 10, "foot"; 11, Teda & Daza "sole of foot"; 12, Kwegu "soil"; 13, "rain"; 14, "smoke"; 15, Mabaan "ashes" or Nuer & Dinka "smoke"; 16, "dust"; 17, "darkness"; 18, Soo, Nyang'i; 19, "dry season"; 20, Masalit; 21, "to burn"; 22, Kwegu "to burn"; 23, pLuo "to burn, shine".
Ref.: Nara {62}; SE Surmic {47}; SW Surmic {32}; N Surmic (Majang) {73}; Mabaan {21}; pLuo {31}; Kuliak {28, 73}; Fur {48, 73, 8}; Amdang {77}; Kanuri {50}; "Tubu"-Teda-Daza {14};

Sound correspondences between Kadu initial *t- ~ ṯ-* and NS

See also "(lower) leg" and "ashes" above

Family	Language	"to kill"	"smoke"
Kadu	Mudo	*ta-ana* [1]	*ndiyɔk/tiyɔk* [2]
Nara	Higir	*di ~ de* [3]	-
Surmic	SES	-	*duka ?* [4]
Surmic	SWS	-	-
Surmic	NS (Majang)	-	-
W. Nilot.	pW. Nilot./Nuer	**t̲0u* [3]	*tɩk* [5]
Kuliak	Ik	-	-
Foran	Fur	-	-
Foran	Amdang	-	-
Maban	pMaban	-	-
Saharan	Kanuri	-	-
Saharan	"Tubu"-Teda-Daza	-	-

1, Pan-Kadu (Yegang & Miri *ɛɛda-ana,* Talla *aada-ana*, Tolibi *iida-ana*, Sangali *[ɛ]aada-ana,* Krongo *ɩɩda-an*, Talasa *ɩɩɗa-ana*) {66}
2, Pan-Kadu (Yegang *tiikʊ,* Kufo *tiigɔ,* Miri *ntiigu[-k]/tiigu[-k],* Talla *ndiigʊ,* Tolibi *nṯiigo,* Sangali *andiigɔ/tiigɔ,* Krongo *ndiigʊ* (also "dust"), Talasa *ndiigʊ* (also "cloud"); (sg/pl.) {66}

3, "to die"; 4, Me'en "ashes" (loan from Arabic *duχχaan* "smoke" not excluded); 5, Nuer "cloud, fog".
Ref.: Nara {62}; SE Surmic {73}; pW. Nilot. {31}; Nuer {78}.

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On 'One' and Other Numerals in Ural-Altaic

Comments on H. S. Levitt's Article

Juha Janhunen
University of Helsinki/Helsingfors

Numerals are known to be among the best indicators of genetic affinity. Many otherwise widely diversified language families, notably Indo-European, show considerable etymological uniformity in the synchronic numeral systems of the descendant languages. It is therefore at least potentially diagnostic that the languages of the Ural-Altaic areal and typological complex, recently also termed "Trans-Eurasian," do not reveal any systematic material similarities in their numeral systems. Although often assumed to be related with each other, each of the six entities comprised by the Ural-Altaic complex—Uralic, Turkic, Mongolic, Tungusic, Koreanic and Japonic—has a basically idiosyncratic system of numeral roots with no cognates in the other languages of the complex. Attempts to identify cognates in the numerals of supra-family entities like, for instance, "Altaic" (Hamp 1970), have not yielded generally acceptable results. This suggests either that the families comprised by the Ural-Altaic complex are not mutually related, or that their numeral systems were formed after they separated from each other.[1]

Before examining the Ural-Altaic items for 'one' we have to review a few basic properties of numerals and numeral systems in Ural-Altaic:

(1) **Gradual completion of numeral systems.** Among the Ural-Altaic entities, Uralic stands apart because of its great linguistic and geographic diversification and, hence, age. The lexicon that can be reconstructed to Proto-Uralic points to a Mesolithic or early Neolithic dating. Only two numeral roots, 2 **käkta* and 5 **wixti* (in Samoyedic 10) can be reconstructed for Proto-Uralic, while the rest of the numerals seem to be post-Proto-Uralic innovations. This suggests that the system was not yet complete at the level of Proto-Uralic. The etymological material also suggests that both Samoyedic and Finno-Ugric had subsequently systems with 'six' as the highest number. Thus, for instance, all languages of the Finno-Ugric branch share the items 3 **kormi* (> **kolmi*), 4 **nelya* (> **ñelya*), and 6 **kuxti*, none of which is attested in Samoyedic (Honti 1993).

The other protolanguages of the Ural-Altaic complex have a much shallower dating than Uralic and show fully developed decimal systems. Only for pre-Proto-Japonic does it seem possible to postulate an original non-decimal system, in that the Japonic numerals for 'six', 'eight' and 'ten' show a well-known (though hypothetical) "ablaut" relationship to the corresponding items for 'three', 'four' and 'five', cf. 1 **pi(-)tö* : 2 **pu(-)ta*, 3 **mi* : 6 **mu*, 4 **yö* : 8 **ya*, 5 **i(-)tu* : 10 **tö(-)wo*. In any case, the Japonic items for the remaining basic digits, 7 **nana* and 9 **kökönö* are structurally aberrant from the rest of the system and might therefore be secondary innovations, or even borrowings. In spite of occasional claims to the contrary (e.g. Vovin 1994: 106) the Japonic numerals have no obvious genetic cognates elsewhere in "Altaic."

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[1] Note that although I am saying that Ural-Altaic should not be understood as a genetic entity in the sense of a language family or a phylum, I do not rule out the possibility of distant genetic relationships between *some* of the individual entities comprised by the Ural-Altaic complex. The two most likely candidates for a true genetic link would seem to be Mongolic and Tungusic (collectively also termed "Khinganic"), though even in this case, the binary relationship remains to be verified, and it is possible that the comparative corpus will turn out to be too small for a definitive conclusion. However this may be, Ural-Altaic, or Trans-Eurasian, with the six entities it comprises, is a relevant object of study in the areal and typological sense. To explain the extant structural and material similarities between the languages of the Ural-Altaic complex, an intricate network of areal contacts and a long history of interaction has to be assumed. In this field, also, much remains to be done.

(2) **Borrowability of numerals.** Although basic numerals tend to belong to the most stable parts of the lexicon, two types of numeral borrowing are widely attested in the Ural-Altaic languages. On the one hand, it is common that numeral systems are replaced by more advanced ones, in which case the term for the new base is borrowed from the more advanced system. This has happened in all branches of Uralic, which have borrowed the numeral for 'seven' from several adjacent branches of Indo-European (Napolskikh 1995). There is a possibility that the similarity of Japonic 7 **nana* with Tungusic 7 **nada/n* also reflects a similar ancient loan contact. With the transition to a decimal system the Indo-European term for 'ten' was also borrowed into some Uralic branches (Ugric, Permic), while the term for 'hundred' was borrowed either from Indo-European (into all branches of Finno-Ugric) or from Turkic (into Samoyedic).

On the other hand, together with other categories of cultural vocabulary, an entire numeral system or subsystem can also be borrowed. This has happened in East Asia, where the Chinese numerals have been integrated into Japanese (Sino-Japanese) and Korean (Sino-Korean), as well as into several other languages in the region. It is notable that both Japanese and Korean nevertheless preserve also their native numeral sets. More recently, Chinese and/or Tibetan numerals are being borrowed into several languages in the Sino-Tibetan contact zone, including, for instance, Mangghuer (Slater 2003: 94). A more restricted case of numeral borrowing is present in Jurchen-Manchu, which has borrowed the Para-Mongolic numerals for the teens (Janhunen 1993).

(3) **Internal innovations in numeral systems.** Compared with external borrowings, internal innovations in numeral systems are less common, but not unattested. Both internal and external evidence shows, for instance, that the Proto-Mongolic numerals 2 **koxar* (> **koyar*), 6 **jïrguxa/n* and 9 **yersü/n* are innovations that replace older items, still preserved in the Jurchen names for the teens and, to some extent, in Para-Mongolic Khitan (Janhunen 2012: 118-119). It is not immediately clear why individual basic numerals in these and other similar cases have been replaced by innovations. The etymologies of the innovative items often remain obscure, leaving open the possibility that they may be loanwords from unknown languages.

There are nevertheless a few examples of etymologically transparent innovative numerals in the Ural-Altaic languages. At the deepest level we can only speculate that an item such as Uralic 2 *käkta* (> Western Uralic **kakta* > Finnic **kakti*) might be based on the reduplication (with a following metathesis) of **kät(i)* 'hand, arm' (attested in all Finno-Ugric languages but not in Samoyedic), or that Finnic 10 **kümmen(e-)*, with a cognate only in Mordvinic, might be identical with **kämmen(e-)* 'palm (of the hand)'. More commonly we observe that items located between an old and a new base in the system are created by means of multiplication or subtraction, as in Samoyedic 8 = 2x4 **kitä+tettə* and Finnic 8 = 10–2 **kakt+e-k-sV-n* ('two not being') (Itkonen 1973: 332-339). A similar example is present in the Proto-Mongolic item for 'six', which is derived from 2x3 **jir+gu(r)-pan*.

Coming now to the items for 'one', it is a general trend in the Ural-Altaic languages that they do not necessarily belong to the oldest numeral vocabulary. This may be because the concept of 'one' is often connected with deixis, specificity, or indefiniteness—as also in Indo-European. Typically, each of the relatively shallow families comprised by the Ural-Altaic complex has an idiosyncratic root for 'one': Turkic **bi:r*, Mongolic **ne-i-* ~ **ni-* : **ni-ke/n* (> **nige/n* > **nege/n*), Tungusic **emö:-n*, Koreanic **kon-* (> *han-a*), and Japonic **pi(-)tö*. Any attempts to find cognate relationships between these items, like, for instance between Turkic **bi:r* and Japonic **pi(-)tö*, are doomed to be premature, since they are not based on verifiable regular correspondences.

Not surprisingly, the relatively more diversified branches of Uralic also do not share a uniform item for 'one'. A form clearly standing apart is Samoyedic **o-* : **o-p*, while most of the Finno-Ugric languages seem to contain irregular traces of what could be reconstructed roughly as **VkV* > **iki*. In Western Uralic this is represented as **ikti* ~ **ükti* (> Finnish *yksi*) due to the influence of 2 **käkta* > **kakta* (> **kakti* > Finnish *kaksi*). The items in the languages of the so-called Ugric branch, especially Hungarian *ëgy*, are nevertheless controversial and may represent separate etymons (for the data, see Honti 1993: 75-82). Needless to say, none of these items can have anything to do with secondary lookalikes like Sino-Japanese **iti* (> *ichi*) : **it-kai* (> *ikkai*) 'once'.

Attempts to find internal etymologies for the Ural-Altaic numerals for 'one' have also been unsuccessful so far. There is, for instance, no substantial evidence to claim that Tungusic **emö:-n* would be connected with the widespread **(m)ama/*eme* words for 'mother', which, moreover, are present in Tungusic only as borrowings from Mongolic. It is more promising to note that all Uralic items for 'one' begin with a vowel, suggesting that they may indeed be connected with deictic pronouns of the type **V*(-). In any case, deictic pronouns are common sources for Uralic ordinals meaning 'first' and 'second', as in Finnish *ensi* (< **e-mti*, from **e* 'this') and *toinen* (= *to-i-nen*, from **too* 'that'). The reciprocal construction 'one—the other' (French *l'un—l'autre*) is also well known, as in Hungarian *ëgy+más-* ('one' + 'other').

There are also examples of borrowing in the realm of 'one': Finnic **aina* 'always, ever' and **ainoka* ~ **ainako* (> Finnish *ainoa*, *ain-ut*) 'the only one' were borrowed from Iron Age Germanic **aina*(-) 'one' : **aina-ho* 'the only one', though for **aina* a Baltic source (the same etymon) has also been suggested. As for the global TIK-words for 'digit'—'one', there seem to be none in the Ural-Altaic complex. The words for 'finger' also have generally a different structure and comprise even innovations. Samoyedic Tundra Nenets, for instance, has no simple native word for 'finger', for the concept of 'finger' is expressed by the phrase *nguda-n+tarka* 'branch of the hand' (*nguda-n-* 'hand-GENITIVE' + *tarka* 'branch').

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The Number 'One': Response to Discussants

Stephan Hillyer Levitt

This paper was originally penned with the idea of making it accessible to a wide audience of linguists. Ordinarily in my papers I give a detailed background discussion of previous literature on a topic. And most often, editors or readers comment that it ought to be cut out, or cut drastically. Here, in order to keep the paper widely accessible, I decided not to do this. And so, I have instead been taken to fault for this. I thank Václav Blažek for listing such literature here. I note, though, that he has not included in his listing of bibliography Gonda (1953) on the numerals 'one' and 'two' in ancient Indo-European languages and Emeneau (1957) on numerals in comparative linguistics, with special reference to Dravidian. Aspects of these two studies were, though, referred to in context in my paper.

On a first reading of Allan Bomhard's comments on the paper under discussion, it appeared to me that he was basing his comments on an earlier version of the paper in which metathetic *tik* forms were treated in brief up front. This may not be so, though. Bomhard, however, fails to take into consideration the main argument of the paper, that Dravidian forms for 'one' are genetically related to the standard and most common forms for 'one' in Indo-European languages.

1. Proto-Indo-European *oi-nos, or *oi-no- 'one'.

Bomhard appears to take **oi-* as the primitive Indo-European form for 'one', as also Blažek seems to, on the basis of his suggested cognates in other language families and his structuring of the Dravidian forms – which ignore internal euphonic combination. (The reconstruction of the Dravidian forms for 'one' that he is using is faulty.) Greenberg (2000-2002/2: 124, no. 284), too, views such as the primitive root. He, too, suggests a few cognates in other language families comparable to those suggested by Blažek. And such may indeed be related on a *deeper* level.

PIE **oi-* is not a form for 'one', though: PIE **oi-nos*, or **oi-no-* is! **oi-* is a deictic pronoun. Even Bomhard's handbooks should list **oi-nos*, or **oi-no-* beside **oi-ko-* and **oi-wo-* as alternate forms for 'one'. **oi-ko-* is citable only for Sanskrit and languages derived from it or derived from Indo-Aryan dialects akin to Vedic Sanskrit. And **oi-wo-* with the meaning 'one' is citable only in the Iranian branch of Indo-Iranian. Such an interpretation of the data goes back to Gonda (1953: 75-80), as was pointed out in my paper. The argument would seem to have been generally accepted since on account of Jan Gonda's reputation, which is considerable and is, indeed, well deserved. But his argument here, while it attempts to explain otherwise anomalous points, does not hold up to critical scrutiny. It cannot be emphasized enough that Gonda takes the PIE suffix *-*ko-* in his interpretation of Skt. *eka* to be a collective, in the same morphological class as Skt. *dvika* 'consisting of two' and *trika* 'consisting of three'. He then further extends such an interpretation to the PIE suffixes *-*wo*- and *-*no*-, considering these, too, to have collective force. But in *Ṛgveda* 10.59.9, it is Skt. *ekaka* that appears in context with Skt. *dvaka* – the Vedic form comparable to the later Sanskrit from *dvika*, and *trika*.

Such an interpretation of the data contrasts with Julius Pokorny's treatment of Skt. *eka*, which places it together with Lat. *ūnicus*, Goth. *ainaha*, OChSl. *inokъ* (1959-69/1: 286) – though it is not strictly parallel to these forms, and of Skt. *eva* 'so, just so, alone' and Av. *aēva*-, OP. *aiva*- 'one, only, alone' (1959-69/1: 286, 75). For details of Pokorny's analysis of these forms, see my discussion in the paper proper.

EWA 1: 262-63, in contrast to the way in which I glossed over it in the paper, appears to combine the two arguments, and citing the Mitanni form *aika* for 'one', instead of Vedic *eka*, and taking into account Iranian **ai-wo*-, reconstructs **ai̯ka* < **ai̯u̯a-ka*, parallel to Lat. *ūnicus*, Goth. *ainaha*, and also to Vedic *eka-ka*, **ai̯ka* being understood as an "Allegro-Form." With regard to a problem in accentuation that he points out, that in Vedic Sanskrit we have *evá* and *evám*, yet the Vedic word for 'one' is accented *éka*, he cites an argument that explains this as being due to gemination in a form **ekka*-.

EWA is imploring here a lot of hypothetical forms and hypothetical developments. Clearly, something is amiss! Also, see section **5** below in the discussion devoted to proposed alternate derivations of Skt. *eka*, with regard to the Mitanni form *aika*.

Neither Bomhard (2008 and 2011) nor Dolgopolsky (2008) see Nostratic correspondences here.

2. Proto-Indo-European **sem*-.

This form is used for the numeral 'one' only in Greek, Armenian, and Tocharian A and B. In Greek, it has replaced PIE **oi-nos*, or **oi-no*- (Buck 1949: 937, no. 13.32). It is represented elsewhere in Indo-European, and also in other language families grouped under Nostratic, but not in usage as the numeral 'one.' Its more general meanings are 'like, same.' It is listed in Bomhard (2008: 301-303, no. 282 and 2011: 92, no. 193) and Dolgopolsky (2008: 1914-16, no. 2064). In his comments here, Blažek adds forms in Altaic that conceivably may be construed to indicate related forms with a semantic force 'one, single.' Note the observation of Miller (1971: 230), though, that the original Altaic form for 'one' has been replaced in most Altaic languages by a variety of innovations.

With regard to the usage of this form for the numeral 'one' in Indo-European, note that whereas Armenian is one of the more easterly *satəm*-languages, like the Indo-Iranian languages, the Balto-Slavonic languages, Albanian (possibly with ancient Illyrian), Thracian, and probably Phrygian, Tocharian is a *centum*-language like the more westerly *centum*-languages such as the Italic languages, the Germanic languages, and the Celtic languages; and there is archeological evidence suggesting that its speakers were Western intruders into their easterly geographic area (Barber 1999: 20-21, 112-19, 127-29, 144-45). It would appear that the total replacement of the usual PIE **oi-nos*, or **oi-no*- forms for 'one' by PIE **sem*-

forms is innovation in geographically eastern locations. This can possibly be viewed in context with what Miller sees to be innovation in Altaic languages for the numeral 'one.' As well, this is perhaps significant in the argument in my paper that Skt. *eka* is a loan form in origin, and that the Iranian forms are innovation. There seems to have been a *tendency* to replace the usual PIE **oi-nos*, or **oi-no-* forms for 'one' in geographically eastern Indo-European languages. So also, Čašule (2012: 145, following Berger 1992: 245) considers Burashaski forms connected with PIE **oi-nos*, or **oi-no-*, to be autochthonous, and Burashaski forms from Skt. *eka* to be innovations.

I did not treat these forms in my paper, for which I stand corrected. They are not, however, common Indo-European words for 'one,' as such. Their wider semantic spread, though, is well represented (Pokorny 1959-69/1: 902-905).

Blažek's bringing in words for 'first' here, makes sense only in the context of the wider meanings for PIE **sem-* and the extension of such meanings to include 'single' (Pokorny's euphemism "in eine zusammen [in one together]") which enables Blažek to include his proposed Altaic cognates, and in the context of the connection made by Greenberg between the Indo-European forms for 'first' and Proto-Altaic **bir* 'one' – regarding which see section **7** below.

3. Proto-Indo-European **oi-nos*, or **oi-no-* 'one' and Proto-Dravidian **ŏ̄r-* : **ol-* 'one' [*DEDR* 990 (a) - (d); *DEDR* 1006 Tamil *ollu* (with enunciative vowel)], *r* : *l*, *ṟ*, *ṉ*.

As noted above, the structural interpretation of the Dravidian forms for 'one' noted by Blažek does not take internal euphonic combination in the Dravidian forms into account. The interpretation of the data is faulty. When one views the Dravidian forms in the context of a correct structural interpretation and euphonic combination in Dravidian, a connection between the Dravidian and Indo-European forms seems clear. In reference to the examples I give, Blažek's proposed Afro-Asiatic correlates are duly noted. With regard to these Afro-Asiatic forms and Blažek's comment that the sequence **wo-* that they show is not attested in Dravidian, note that a pronounced bilabial onglide before *o* and *ō* is common in most Dravidian languages (Zvelebil 1970: 30 [§ 1.10.6]).[1]

I also note with interest Philippe Bürgisser's suggested Nilo-Saharan correlates for Dravidian *ŏ̄r-* : **ol-* 'one,' which in one instance also shows an initial **w-*.[2]

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[1] Krishnamurti (2003: 49, 52) seems to note such a "subphonemic [on]glide" for speech of the literary Dravidian languages only. The forms Blažek cites are East Cushitic **wal-* / **wil-* > Saho *wili* 'one,' Somali *wal* 'all,' Elmolo *wol* 'together, Oromo *wol(-i)* 'together, with,' Sidamo *wole* 'other.'

[2] The cited forms are Proto-Nubian **weer* > Nobiin *wee[r]* ~ *weel* 'one,' and Mimi-N *ul-* 'one.' Perhaps to be considered here as well are Kunama *ella* 'one' and Proto-Moru-Madi (Central Sudanic) **alo* 'one,' which Bürgisser places together with forms that suggest a root **kel* on the supposition that the latter's initial *k-* represents a "movable" prefix, without our considering here the references to the Gumuz words for 'hand' that Bürgisser cites. (Note the mention below in section **4** on metathetic *tik* forms that **kel* represents a metathetic *tik* form.)

With regard to Blažek's comment that Tamil *ol* 'end, limit' (not in *DEDR*, but see *TED* 1/3: 371b) may be connected as well with the interpretation of the Dravidian words for 'one' presented in my paper, note that *TED* derives Ta. *ol* from *ul*. See *DEDR* 671 Ta. *ula* (*-pp-*, *-nt-*) 'to become diminished …', *ulakkai* 'end, ruin, death.' So also, *TED* 1/3: 111a Ta. *ula-ttal* 'to become diminished, to be spent, wasted' … 'to die, pass away', Ta. *ulakkai* 'end, ruin, disaster, death.' Such a derivation speaks against Blažek's connection of Ta. *ol* 'end' with the Dravidian words for the number 'one.'

I duly note, as well, Blažek's proposed Hittite, Uralic, and Afro-Asiatic correlates to *DEDR* 2559 … Ta. *illai* 'it is not' and my proposed Indo-European correlates.

With regard to such correlates that display an alternation of **r* : **l* in Dravidian and **n* in Indo-European, Blažek comments on my etymology of PIE **ḱu̯on-, *ḱun-* 'dog' connecting it with the etyma in *DEDR* 1796 Ta. *kurai* (*-pp-*, *-tt-*) 'to bark, jubilate …, *n.* noise, roar, shout' … *kukkal, kukkaṉ* 'dog,' also *DEDR* 1901 Ta. *kūraṉ* 'dog,' noting that the compatible forms to PIE **ḱu̯on-, *ḱun-* are the etyma noted in *DEDR* 1026 Ta. *ō-nāy* 'Indian wolf' and such forms not noted in DEDR as Ta. *ōṉāy*, with regard to which *TED* refers the reader to Ta. *ōnāy*, and Ta. *kōnāy* and *kōṇāy*, both also 'Indian wolf.' As *DEDR* suggests, *TED* notes that these forms are to be construed as *ō* + *nāy* 'dog' (*TED* 1/3: 410b), and *kō* + *nāy* (*TED* 2/3: 330b) and *koḷ* → *kōḷ* → *kōṇ* + *nāy* (*TED* 2/3: 318b).

Ta. *nāy* (*DEDR* 3650) is the common word for 'dog' in modern Tamil.

Ta. *ō* has among its meanings *periyadu* 'that which is great.' Samy (1967-68: 172-175, 179) surmises it may also have meant 'that which howls,' in an onomatopoetic sense. The form *ōṉāy* that Blažek cites is an illiterate spelling of *ōnāy*.

The form in classical Sangam literature, as in *Naṟṟiṇai* 82, line 10, is *kōnāy*, referring to 'the wolf' which slaughtered the wild pig. Early palm leaf copiers, or perhaps Piṉṉattūr A. Nārāyaṇacāmi Aiyar who first edited and published *Naṟṟiṇai* early in the 20th c., mistakenly thought that the reference was not to 'the wolf,' but to 'the hunting dog' used by men who went hunting, and corrected *kōnāy* to *kōṇāy* so that they could gloss it 'hunting dog' < *kōḷ-nāy*, the related verb of which appears on the same line in *Naṟṟiṇai*. The University of Madras *Tamil Lexicon* and *TED* 2/3: 318b baselessly give this hypercorrection as a legitimate alternate form. Fabricius (1933: 315a) notes of *kōṇāy* that it is properly *kōnāy*, to which form he forwards the reader.

A derivation of *kōnāy* < *kol*, meaning 'killing, slaying' + *nāy*, though unusual, may have come about in very ancient times. But to note just one peculiarity, such a derivation should result in **kōṉāy*, which form does not exist. (*-l* + *n-* > *ṉ*; see, for instance, Rajam [1992: 106], or see Levitt [2010: 64-69].)

More likely, as *TED* 2/3: 330b evokes, just as *ō* has among its meanings 'that which is great,' so also Ta. *kō* 'king' as well refers to 'a great man,' *kō-nāṭu* referring to a division of the ancient Chola country (*nāṭu* = 'country, district, locality'), and the form's possible reflex in Kuṛux *kōhā* refers to 'great, big' (see

DEDR 2177). The two locutions, *ōnāy* and *kōnāy*, both meaning 'Indian wolf,' would thereby have parallel formations.

See Samy (1967-68) regarding these forms.[3]

Such an analysis of the forms speaks against the connection suggested by Blažek for these forms with PIE **ḱu̯on-, *ḱun-* 'dog.' Further, *DEDR* and *TED* cite only the Tamil and Malayalam forms *ōnāy* here. *DEDR* does not include *kōnāy* (or *kōṇāy*), which would appear to be an exclusively Tamil locution. Aside from its not being referred to in *DEDR*, *TED* does not note parallel forms in other Dravidian languages. I must add here that forms being held by Tamil only need not necessarily be significant in this regard. Tamil is very retentive and possesses often, old forms not held elsewhere in Dravidian. Here, though, the morphologically significant element shared by all the forms, is *nāy* 'dog.' As noted, this does not translate to PIE **ḱu̯on-, *ḱun-* 'dog.'

A Tamil form *kōṉāy* for 'wolf' as Blažek cites, as noted above, does not exist. It is not noted in either *TED* or Fabricius (1933).

Comparably, with similar construction, note the words for "the wild dog or red dog (which is neither dog nor wolf) …" in *DEDR* 1931 Tamil *ce-* [PDr. *kē̆-*], which set of etyma contains primarily words for 'red,' Ta. *cen-nāy* 'brown-colored dog, *Canis dukhunensis*'; Malayalam *cen-nāyi* 'wolf or rather *C. primaevus*'; Kota *ke na·y* 'wild dog,' *kepn* 'red bullock or male dog'; Toda *ke no·y* 'wild dog'; Koḍagu *ken-na·y* 'wild dog'; Tulu *canna-nāyi* 'wolf.'

Just as *DEDR* lists Tamil and Malayalam *ō-nāy* under *ō*, though it does not gloss *ō*, it lists these forms under words for 'red.'

Also note Tamil *tīnāy* 'a dog that frequents the burning ground' in *Maṇimēkalai* 6.114 in the cemetery scene, listed in *TED* 4/2: 137b, and derived there from *tī* 'to be burnt, charred,' 'to burn,' 'fire' (including 'consecrated fire'), etc. (*DEDR* 3266) + *nāy* 'dog.' Samy (1966-67) glosses this 'hyena.' Krishnaswami Aiyangar (1928: 126) translates 'jackals,' burning grounds being frequented by jackals in Theravāda Buddhist *Jātaka* stories, as well.

I ought to add that Levitt (1989a), in which I first wrote up this specific material comparing these Indo-European and the Dravidian forms for 'one', was published with many printing errors. I mention this here as Dolgopolsky (2008) cites this 1989 article in its bibliography. If I am able to publish a collection of my papers on Dravidian in the near future, as I hope to do, I hope to correct this.

In the 1989 article, I was taking the connection I saw between the Indo-European and Dravidian forms for 'one' to be due to a substratum theory. In Levitt (1998: 144-47, entry no. 13), this was changed to an argument of genetic connection.

I should also add that the presentation of the Dravidian euphonic combination concerned here explains what led Emeneau (1957) to see evidence for an alternation of *r* and *ṟ* in Dravidian, and "morphological doublets" with the alveolar nasal *ṉ* and alveolar *ṟ* (see Levitt ^{3}in press).

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[3] I would like to thank P. Ramanathan, M.A., B.L., of Chennai, Tamil Nadu, for this information regarding Ta. *ōnāy* and Ta. *kōnāy*. I take full responsibility for the opinions expressed, however. The visualization of Ta. *kōnāy* as being derived from the etyma in *DEDR* 2177 + *nāy* is my visualization of this form.

4. Metathetic *tik* forms.

In the original draft of this paper, I included up front what I see to be metathetic *tik* forms, specifically Hebrew *eḥad*, Arabic *waḥid* 'one' (*aḥad*, *pron.* 'one, someone, somebody'), Akkadian *ēdu* 'single, alone' (*ḥ* is not expressed in the Akkadian writing system); and, for instance, Finnish *yksi* 'one,' Mari *ikte*, Mansi *üx*, *äk* 'one,' Hungarian *egy* (Proto-Fennic-Permic, perhaps Proto-Finno-Ugric **ikte* ~ **ükte*).

Note that Dolgopolsky (2008: 97-98, no. 13a) relates these forms. Neither Dolgopolsky nor Bomhard accept metathesis yet as a formative process in Nostratic.

In the paper as published here, on the basis of comments made to me by John Bengtson, I back stepped. Proto-Fennic-Permic **ikte ~*ükte*, though, on reconsideration, seems to me to be a perfect instance of a metathetic *tik* form.

One of Bengtson's comments to me at the time with regard to Heb. *eḥad*, etc. being metathetic *tik* forms was that there were no instances in Semitic in which **k* > **ḥ*. At the time of the paper's revision, I noted that fasc. 9 treating Semitic roots that begin with *Ḥ*, just published in 2010, for Cohen (1970-99), was not yet available to me; but that such might perhaps note some forms in which Semitic **k* > **ḥ*.

I have now been able to consult that volume. In it, Cohen gives examples of several alternations with **ḥ*.

For instance, for the root *Ḫ̮MNB/M* 'little insects,' Cohen (2010/9: 882b) cross-references the root *KNM* and its variant *KMNM*, the name of an insect, 'louse [*pl.* lice].'

Under both *ḤZG* (Cohen 2010/9: 854a) and *ḤZK* (Cohen 2010/9: 855b), the root *ḤZQ* is cross-referenced. Under *ḤĐM*, Cohen (2010/9: 839b-40a) notes to see a wide assortment of parallel roots that include *GĐM*, *HĐM*, *Ḫ̮ĐM*, and *ƐĐM*. For *Ḥ/Ḫ̮DK*, Cohen (2010/9: 835b) notes the possibility of a connection with *Ḫ̮ĐQ*, but adds that in more recent studies it is always *k* that appears.

I can also add from the earlier volumes, for instance, that Cohen (1970-99/3: 184) notes under *GRH* such a form as a metathesis of *GHR*, cross-references *GRḤ*, and notes further that these forms are united with Ar. *qarāḥ-*, *qirwāḥ-* 'land without trees,' referring the reader to *QRḤ*.

With regard to Semitic roots that contain variant metathetic forms, fasc. 9 of Cohen's volumes adds to his earlier volumes many more examples. For instance, for *ḤDG*, Cohen (2010/9:833b-34a) cross-references *ḤDQ* and *GDḤ*.[4] A number of such examples of metathesis in Semitic are given in the paper under discussion.

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[4] I might add in passing that Cohen (2010/9: 898a) notes under *ḤNŚ* (which carries among its meanings 'to hunt,' 'to seduce,' and 'reptile'), that Hebrew presents for 'serpent' the form *nāḥaš*. Compare Sanskrit *nāga* 'snake' and Tamil *nākam* 'snake.' The latter is generally taken to be a loan form in Tamil. Tamil, though, as also Old English and Finnish, shows a corresponding verbal form not in Sanskrit with a meaning 'to creep, crawl' (Finnish, 'to hunt crawling on the

This all speaks to Bomhard's curt dismissal of my suggestion that Heb. *eḥad*, etc. might be a metathetic *tik* form.

In the context of the suggestion that Heb. *eḥad*, etc. is a metathetic *tik* form, I referred in the paper under discussion to my earlier work on metathetic forms displayed in Dravidian, and metathetic correlates that could be suggested between Indo-European and Dravidian (= Levitt 2003), but for reasons of space, and because I was trying to keep the paper generally accessible and not overly technical, I did not give any such examples – except for those I was arguing in the paper. I note two such examples here.

One demonstrates clearly the priority of Dravidian to Indo-European, as suggested for instance in a comment made by Joseph Greenberg in correspondence with Bh. Krishnamurti (see Krishnamurti 2003: 46), in that it is a suffix in Dravidian that is held initially in the Indo-European forms.

Thus, *DEDR* 3268 (a) Ta. *tīm* and (b) Ta. *tēṉ* 'sweet, honey, honey-bee': PIE **médhu*, Skt. *madhu* and PIE **meli-t* 'honey' (Pokorny 1959-69/1: 707, 723-24). The medial *-l-* in PIE **meli-t* is explainable on the basis of the alternation between initial **t-* and medial and final **l* / **ḷ* in metathetic forms in Dravidian (Levitt 2003: 178, ^{3}in press).

A second and final example we can give here is:

DEDR 1479 Ta. *kāl* 'leg, foot, base (of tree),' also 'pole, post, prop, support' (*TED* 2/2: 154b) and 'part of leg below the knee' (Devaneyan 2004: 45 [mng. 7]); *DEDR* 3151 Pa. *tāk-* 'to walk' [PCDr **tāk-*]: Eng. *leg* (Pokorny 1959-69/1: 673), *calf* (of the leg) – of unknown origin, *column* < Lat. *columna* (see Levitt 1998: 139, entry no. 5; 2003: 175-76, ^{3}in press).

For other such examples, see Levitt (2003 and ^{3}in press).

I mention here the examples I give as Blažek characterizes my argument that the origin of the *tik* forms can be seen in such Dravidian words as *kai* 'hand' as including hazardous speculation about metathesis of consonants. But such was clearly a formative process in Nostratic. Examples of it abound in Dravidian, and can be seen as well in Afro-Asiatic (which includes Semitic) – which is seen to have separated from the main Nostratic stock immediately before Dravidian by current opinion (Bomhard 2008 [ebook]: Chapter 1, 2011: 4-5). And, as shown above, examples of it between Dravidian and Indo-European can be pointed to. While I am not able to present a clear-cut *semantically transparent* Dravidian form as a correlate, I do present arguments of process, buttressed by examples.

These comments apply as well to Bomhard's again curt dismissal of this suggestion.

With regard to this suggestion, I note as well that Dolgopolsky (2008 1181, no. 1251) refers to such particles with a diminutive sense as Tamil *-il* that I refer to, as "pc. [= particle] with diminutive meaning," and while he does not include Dravidian examples, he does present Germanic and other Indo-European examples.

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ground'), and Levitt (2007: 20b-21a, ^{3}in press) points to additional forms in Dravidian that seem to be logically related.

Also see Hakola (2009-11/_Suppl._: 33, no. 118), which notes Sumerian _lá_ 'little, reduced,' mentioned to Hakola in correspondence from Simo Parpola.

With regard to Blažek's citing of Illič-Svityč's connection of a Central Dravidian alternate stem _*kac-/*kec-_ for 'hand' in _DEDR_ 2023 Ta. _kai_ 'hand, arm' (such an alternation between _-i_ [_y_] in _-ai_ and _*-c_ is common in Dravidian) with PIE _*ǵ_^{h}_es_, such might well maintain. Characterizing this Central Dravidian stem as "earlier" than the stem _*kay/*key_ held otherwise throughout Dravidian, is unwarranted (see Zvelebil 1970: 70-72 [§§ 1.17.1-1.17.2.1]). Note that _DEDR_ also cross-references _DEDR_ 1957 Ta. _cey_ (_-v-_, _-t-_) 'to do, make' [PDr. _*key_, etc.], albeit with question, just as _TED_ 2/3: 50ab cross-references such forms – the latter noting that it is not clear which is the more ancient, the abstract form (as in Sanskrit), or the concrete form. Further, such a correlation as Illič-Svityč's, noted by Blažek, does not speak against my argument that such an etymon as Ta. _kai_ 'hand, arm' + a diminutive suffix _l_, metathesized > _tik_.

I add that I note with interest Blažek's suggested Afro-Asiatic cognates with Dravidian _*kil-_, _*kel-_ 'few, small' (_DEDR_ 1571 and _DEDR_ 1577) and Dravidian _*takk-_ 'a small quantity, a little' (_DEDR_ 3011). Interestingly, such suggests the Dravidian alternation of final or medial _*l_ or _*ḷ_ with initial _*t-_ maintains in Afro-Asiatic as well. I mentioned in my paper the earlier comment of Pokorny (1950: 161) that there is an alternation in Afro-Asiatic between _r_, _l_, _n_, and _d_.

In this context, supporting my argument regarding the genesis of _tik_ forms in the data presented by Bürgisser, and presenting a clear metathetic _tik_ form with the final or medial _l_ standing in place of initial _t-_, note the reflexes of a root _*kel_ with the meaning 'one' in Proto-West Nilotic (East Sudanic) and in Sara-Bongo-Bagirmi (Central Sudanic), pW. Nilot. _*kɛl_ and pSBB _*kala_. And notice Bürgisser's reference in this context to Gumuz words for 'hand,' Sai _ela ~ era_ and Kokit _ɛla_, with the initial _k-_ having been treated here as a "moveable" prefix, as Bürgisser suggests.

Juha Janhunen mentions toward the end of his comments that there are no _tik_ forms in the Uralic and Altaic languages, but earlier in his comments he points to a Finno-Ugric form _*kät(i)_ 'hand, arm,' which he speculates may be the basis for the Proto-Uralic word for 'two,' _*käkta_ (> Western Uralic _*kakta_ > Finnic _*kakti_ > Finnish _kaksi_) through reduplication, with a following metathesis.

Such a Finno-Ugric form for 'hand, arm,' though, would in fact be a metathetic _tik_ form. Compare, for instance, Yaaku _tegei_ 'hand,' Ainu _tek ~ teke_ 'hand,' Proto-Austroasiatic _*(k-)tig_ 'arm, hand,' Yuchi _saki_ 'hand,' Other comparable forms, especially other Amerindian forms, which are significant here from the vantage of modern genetic data regarding the spread of anatomically modern man, are given in my paper proper.

Western Uralic _*ikte ~ *ükte_ (> Finnish _yksi_) Janhunen would trace back to what he sees to be irregular vestiges throughout the Finno-Ugric languages of what could be reconstructed roughly as *V_k_V > _*iki_, the Western Uralic forms as such being due to the influence of the words for 'two' (see immediately above for forms). The forms in the Ugric languages, such as Hungarian _*ëgy_ he notes may, however, be separate etymons. Sino-Japanese _*iti_ (> _ichi_) : _*it-kai_ (> _ikkai_) 'once' (Hakola

2000: 221, no. 991, Hakola and Assadian 2003: 126, no. 427) he sees to be a secondary look-alike, which may well be so – but we must be careful not to dismiss too quickly potential correlates.

With regard to Western Uralic **ikte* ~ **ükte*, it would seem that it ought to be difficult to say whether such forms are formed by analogy with the word for ‘two,’ or rather that these forms are instances of a comparable formation.

Janhunen mentions up front, it can be noted, that only two numeral roots can be reconstructed for Proto-Uralic, **käkta* ‘two’ and **wixti* ‘five’ (in Samoyedic ‘ten’), all the others being post-Proto-Uralic innovations.

Comparably in Dravidian, according to Levitt (1989: 140-41), a suffix *-tu* is added in the formation of words for ‘one,’ Ta. *on̠r̠u*, *or̠r̠ai* (colloquial, *ottai*) (*DEDR* 990 [d], [c])[5]; ‘two,’ Ta. *iraṇṭu* (colloquial, *reṇṭu*) (*DEDR* 474); ‘three,’ Ta. *mūn̠r̠u* (*DEDR* 5052); ‘five,’ Ta. *aintu* (*DEDR* 2826); ‘eight,’ Ta. *eṭṭu* (*DEDR* 784); ‘nine,’ Ta. *on̠patu* (colloquial, *ompatu*) (*DEDR* 1025)[6], Ta. *toṇṭu* (*DEDR* 3532); and ‘ten,’ Ta. *pattu*, *paḥtu* (*DEDR* 3918).

The Proto-Uralic formations for ‘two’ and ‘five’ (in Samoyedic ‘ten’), and the Western Uralic formations for ‘one,’ would appear to be examples of a comparable process.

I was going to say that the derivation of Western Uralic **ikte* ~ **ükte* argued by Janhunen, even should we construe it as a comparable formation to the words for ‘two’ and ‘five’ rather than by analogy to the word for ‘two,’ argues against the forms being metathetic *tik* forms, but such an opinion may be premature. One must wonder whether Western Uralic **ikte* ~ **ükte* ‘one’ and Proto-Uralic **käkta* ‘two’ are just variant realizations of Finno-Ugric **kät(i)* ‘hand, arm.’

Janhunen’s derivation for these forms for ‘one,’ I might note, does not necessarily argue against their possible connection with Hebrew Hebrew *eḥad*, Akkadian *ēdu*, etc. as argued by Dolgopolsky and, independently, by myself.

5. Sanskrit *eka* ‘one’ < Hebrew *eḥad* ‘one’, Akkadian *ēdu*, etc.? Sanskrit *eka* ‘one’ < Finnish *yksi*, Mansi *üx*, *äk*, Hungarian *egy*, etc. ‘one’?

Vaćlav Blažek in his comments on my suggestion that Sanskrit *eka* might be derived from Hebrew *eḥad*, etc., and Allan Bomhard in his comments on my suggestion that it might instead be derived from Mansi *üx*, *äk* ‘one,’ Hungarian *egy* ‘one’, etc. (Proto-Fennic-Permic, perhaps Proto-Finno-Ugric **ikte* ~ **ükte*), take as their starting point that Skt. *eka* < **aika* on the basis of the form *aika* appearing for ‘one’ in a Mitanni document *ca.* 1350 B.C.E. With regard to this, Moriz Winternitz, who was a very conservative yet open-minded scholar, observed that the grouping of the gods Varuṇa and Mitra, Indra and Nāsatyau in the Mitanni material was reflective of the Vedic grouping for which there is no independent testimony outside the Vedic material. On this basis, he viewed the Mitanni material to reflect Aryan immigration out of northwestern India (1927-33/1: 305-306).

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[5] P. Ramanathan has informed me (correspondence dated May 4, 2012) that a form Ta. *oṭṭai* (= *or̠r̠ai*) as listed in *DEDR* 990 (c) does not exist in Tamil, but rather that the colloquial form for Ta. *or̠r̠ai* is *ottai*. A form *oṭṭai* occurs in only a single literary reference, and is never repeated elsewhere. And its derivation from *or̠r̠ai* is questionable. A form *oṇṭi* ‘one, single, alone,’ as listed in *DEDR* 990 (c), does occur in Tamil and Kannaḍa, though, as also in Tulu and Telugu, for instance, with a reflex in Kuṛux, as well.

[6] By the derivation of the number ‘nine’ in Emeneau (1957), it is composed of the numbers ‘one’ subtracted from ‘ten.’ This is not supported by Dravidian rules of euphonic combination, though; or, by comparative data when we consider Kota, Tulu, and Gondi forms for ‘nine’ and Kota forms for ‘nineteen’ in *DEDR* 1025.

More recently, Kak (2007), viewing the Mitanni to be a westward movement out of India of Vedic Aryans with the drying up of the Sarasvatī River, outlined bonds of marriage between the Mitanni and the Egyptian rulers of the 18th Dynasty, to which dynasty Akhenaten (1353-36 B.C.E.) belonged. Kak views the monotheistic beliefs of Akhenaten as being due to the influence of what were probably late Vedic beliefs of the Mitanni. With regard to the observable development of monotheism within the *Ṛgveda*, see Winternitz (1927-33/1: 98-100), Keith (1925/2: 434-38), and Levitt (2003b: 353-54, ^{2}in press).

The argument advanced by Burrow (1973b) that Indo-Iranian was already divided into Indo-Aryan and Iranian groups before the Indo-Aryans entered the Indian subcontinent, and that a group of Indo-Aryan invaders settled in eastern Iran and western Afghanistan from which area some went south to the Near East while the remainder went east to India, is clearly contrived (see Levitt 2008: 220-22).

The reconstruction of Proto-Indo-Aryan **aika* is thus hazardous, and very probably incorrect. There is no clear-cut justification for giving priority to the Mitanni form in reconstructing a proto-form.

Both Blažek and Bomhard seem to be taking the reconstruction from *EWA* 1: 262-63. But, regarding *EWA*'s full speculation, see section **1** above that treats PIE **oi-nos*, or **oi-no-*.

Further, Bomhard in his comments on the proposed connection with Heb. *eḥad*, Akk. *ēdu*, etc., wants to make the comparison with a PIE reconstructed form **oi-ko-*, the forms for which it has been noted above are citable only for Sanskrit, languages derived from Sanskrit, and languages derived from Indo-Aryan dialects akin to Vedic Sanskrit. PIE **oi-ko-*, as noted above, is not a legitimate proto-form.

Both Bomhard and Blažek with regard to this specific suggestion emphasize comparison with reconstructed Proto-Semitic forms (each offers a different reconstructed Proto-Semitic form). Aside from reconstructed forms being only conjectures based on current opinion regarding sound correspondences, and no more than summary statements of our current state of knowledge[7], it is most certain that the Sanskrit form would not have been borrowed from a Semitic proto-form, which proto-period would antedate Sanskrit by a lengthy period of time – even given my earlier dating of Sanskrit than is generally accepted by Western academic orthodoxy. The loan would have been from an historic form to an historic language, which latter would have had its own phonology. (Blažek's listing of Afro-Asiatic cognates outside Semitic, while interesting, is beside the point.)

A similar objection holds with regard to Bomhard's comparison of Proto-Indo-Aryan **aika* with Proto-Fennic-Permic **ikte* ~ **ükte*. The loan would have been from an historic form to an historic language, or to dialects of an historic Indo-European sub-family.

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[7] This, I realize, runs contrary to Bomhard's position, which is that "[r]econstructed languages should be thought of as real languages in every sense of the term" (Bomhard 2008: Chapter 1).

In this regard, Bomhard's statement that it was the Iranian branch of Indo-Iranian and not the Indo-Aryan branch that was in contact with the Finno-Ugric languages is just not so. I refer the reader, again, to Burrow (1973: 23-27) who lists many words shared by Indo-Iranian and Finno-Ugric, and who comments:

> "[T]he primitive forms which have to be assumed after a comparison of the Finno-ugrian forms, are identical with those which have to be reconstructed for primitive Indo-Iranian, and are free of any of the later sound changes which are characteristic of Iranian on the one hand and Indo-Aryan on the other. This is quite well illustrated by the first word which represents a primitive form *śata-* (the Indo-Iranian and Sanskrit form) and not *sata-* (the Iranian form). The characteristic Iranian change of *s* to *h* is uniformly absent. … Likewise characteristic Indo-Aryan changes such as *źh*, *jh* to *h* are not found. There is therefore not the slightest doubt that the period when these borrowings took place was the primitive Indo-Iranian period, and it appears probable that the seat of this primitive Indo-Iranian must have been in the region of the middle Volga and the Urals for the contact to have been possible" (pp. 25-26).

With regard to Bomhard's statement that the majority of the borrowings are from Indo-Iranian to Finno-Ugrian, I noted this in my paper. But I also noted at that place, that Burrow cites as well several examples in which the loans went from Finno-Ugric to Indo-Iranian, such as words for 'bee,' 'beard of grain, etc.,' and 'goat.' Burrow lists, as well, three other plausible correlations for which no Indo-European etymologies have been found for the Sanskrit words, and emphasizes that others could be added to boot.

I might also interject here that many Russian archeologists today believe that the Bronze Age people of the European steppe, who are often today identified with the speakers of Proto-Indo-European, were in fact Indo-Iranian (Kuznetsov 2005, Telegin 2005; see also Kristinsson 2012, esp. pp. 408, 422-23 [fig. 2]). Kuznetsov (2005) details a find of a "cudgel-scepter" in a Kurgan site that he identifies with Indra's *vajra*. This weapon is reported to be similar to the so-called "bar-celts" described by Harry Falk as having been found in Hindustan in the Ganges-Yamuna Doab among copper hoards of the 2nd millenium B.C.E. connected to the Ochre-Colored Pottery culture, which culture occupied a territory sometimes linked with early Indo-Aryans. On the basis of Ṛgvedic textual reference, Falk considered these "bar-celts" to be the material expression of Indra's *vajra*.

This is all consonant with the opinion of Levitt (2008a) that the sacred name "Indra" is very ancient.

I add that I am gratified by Blažek's comment that Mansi *üx*, *äk* 'one', Hungarian *egy* 'one' were compared with Skt. *eka* 'one' as well in the beginning of the 20th c. by Bernát Munkácsi; and that while it was rejected by Joki (1973), more recently Honti (1993) has commented that the Ugric forms without *-t-* imply a Finno-Ugric reconstruction **üki* 'one.' I, too, find interesting Blažek's cross-referencing at this point the Tundra (North) Yukaghir forms *axte, ax* 'only, alone.'

Janhunen, too, in this regard cites Honti (1993: 75-82), noting that such forms in "the so-called Ugric branch" of the Finno-Ugric languages, especially

Hungarian *ëgy*, are controversial and may represent etymons distinct from the Western Uralic **ikte* ~ **ükte* (> Finnish *yksi*).

As noted above in section **4** on metathetic *tik* forms, Janhunen sees Western Uralic **ikte* ~ **ükte* to go back to what might be reconstructed roughly as *V*k*V > **iki*, which most Finno-Ugric languages seem to contain irregular traces of, Janhunen argues. Such, as well, is not incompatible with Skt. *eka* being a loan from Uralic.

6. Latin *sōlus* 'alone.'

Blažek adds that Latin *sōlus* 'alone' is etymologizable as a *vṛddhi*-formation from the same base as Lat. *salvus* and *sollus* 'whole' according to de Vaan (2008).[8] Lat. *sōlus* on the one hand, and Lat. *salvus* and *sollus* on the other hand, though, represent disparate concepts. And de Vaan notes this as only a possible etymology for a problem word. Given the varying etymologies for the word noted in the paper under discussion, de Vaan's etymology may be considered as still another attempt at etymologizing this problematic form. See also Ernout and Meillet (1985: 633b [*s.v. sollus*], 591b-92b [*s.v. saluus*], 632b-33a [*s.v. solidus*]). Ernout and Meillet note of Lat. *sollus* that it appears mainly in Oscan.

7. Proto-Altaic **bir* 'one': Proto-Dravidian **ŏ̄r-* : **ol-*.

Philippe Bürgisser refers to my argument with regard to a possible genetic connection between the Dravidian forms for 'one' and the Proto-Altaic form **bir* 'one' as shaky.

As noted earlier in this response, a pronounced bilabial onglide before *o* and *ō* is common in Dravidian languages (Zvelebil 1970: 39 [§ 1.10.6]). It is not restricted only to Tamil, as Bürgisser understands from my wording.

Also, note Toda *wï*, *wa*, beside *u*, where other Dravidian languages have *u* (Zvelebil 1970: 51-52); Toda *wa*, *wï*, *o*, *ï*, where most other Dravidian languages have *o* (Zvelebil 1970: 61, 63-64); and Toda *wā*, *wï̄*, *ï̄*, rarely *ō*, where almost all other Dravidian languages have *ō* (Zvelebil 1970: 64-65).

And, perhaps strengthening the argument a bit, note that the Georgian-Zan form for the cardinal number 'one' is **erti*, Georgian *erti*, Mingrelian *arti*, Laz *ar* (Anon. 2013). These Kartvelian forms would seem to be an alternate realization, and might perhaps be considered to link Proto-Dravidian **ŏ̄r-* : **ol-* 'one' and Proto-Altaic **bir* 'one.'

By present opinion, Kartvelian separated from the main Nostratic stock next after Dravidian (Bomhard 2008 [ebook]: Chapter 1, 2011: 5).

I am gratified that Blažek, too, albeit on different grounds, does not see a connection between Proto-Altaic **bir* 'one,' reconstruction as given by Miller (1971: 230), Proto-Altaic **bi̯uri* 'one' as given by Greenberg (2000-2002/2: 71-72, no. 155), and words for 'first' – as listed by Pokorny (1959-69/1: 815) under PIE **prŏ̄-u̯o*, and together with suggested Semitic and Kartvelian correlates as pointed out by Blažek.

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[8] Lat. *salvus* = Skt. *sarva* 'all, altogether.'

With regard to a Proto-Altaic form **bir* for 'one,' in contrast to Miller (1971: 230) and Greenberg (2000-2002/2: 71-72, no. 155) who see a relationship between Turkish **biːr* and Japanese **pi(-)tö* (Janhunen's reconstructed forms), Janhunen sees a relationship between these items to be premature as they are not based on verifiable regular correspondences.

In relating Old Japanese *Fitö-* 'one' with Korean *pilos* 'beginning,' reconstructing Proto-Korean-Japanese **pilɔ́(su)* 'one,' Miller follows Martin (1966 [misprinted 1967]: 238, no. 157), noting that it goes together regularly with Old Turkish *bir* and its related forms. Greenberg would add Middle Mongolian *buri* 'each, all,' written Mongolian *büri* 'each,' Khalkha *bür* 'each,' etc.

Miller notes that while the various Altaic languages have replaced this numeral with a variety of innovations, given the remarkable correspondence at the two extremes of the Altaic area (even though Korean later specialized its old inherited word for 'one' in the sense of 'beginning' and replaced it in the numeral system with an innovation), "it is quite safe to refer to the original term reflected in OT [Old Turkish] *bir*, pKJ [Proto-Korean-Japanese] **pilɔ́(su)*, and OJ [Old Japanese] *Fitö-*, all '1', to the Altaic unity."

Janhunen differs from Miller in that he sees such forms as Tungus **emöː-n* (Miller 1971: 230, Proto-Tungus **ämün*, Manchu *emu* 'one'; "cf. Japanese *omo* 'paramount'"), Korean **kon* (> *han-a*), as also Turkish **biːr* and Japanese **pi(-)tö*, to be parallel idiosyncratic roots for 'one' in what he judges to be the relatively shallow families comprised by the Ural-Altaic complex; while Miller sees the latter two – together with a Korean term for 'beginning,' to indicate a proto-form for 'one,' and the others to be innovation in various subfamilies.

With regard to the connection of Proto-Tungus **ämün*, Manchu *emu* 'one,' and Japanese *omo* 'paramount' with Old Japanese *omo*, Azuma *amo* 'mother' for which Janhunen notes there is no substantial evidence, I should add that Miller (1971: 230) notes this latter point with question only – which the text in my article failed to indicate.

8. Concluding comments.

It is interesting that Allan Bomhard, who is a Nostraticist, spent most of his over-arching three comments on arguments by me of loan forms. And then, Bomhard treats my arguments of loan forms as if I was arguing genetic connection. Of his three comments, only one treated an argument by me of genetic connection. And here, he seems to have ignored my support for the suggestion which, while it did not present a clear-cut *semantically transparent* Dravidian correlate, as I noted above, did present arguments of process, buttressed by examples, that Bomhard has not presented examples of to date in Bomhard (2008 and 2011). I am gratified that Philippe Bürgisser's Nilo-Saharan data presents clear-cut Nilo-Saharan correlates that support my argument (see section **4** above with regard to metathetic *tik* forms).

I would like to thank Václav Blažek for taking the time to pull together his comments, which I found to be very measured and informative, and which on the whole I believe add something to the paper under discussion – especially when taken together with my comments in this response.

I would also like to thank Philippe Bürgisser. I find the information presented in his discussion to be fascinating.

Bürgisser, though, in his opening comment, seems to have misconstrued by argument that the roughly five basic terms for 'one' in Nostratic / Eurasiatic and the so-called Duraljan languages, can be reduced to two, *tik* and *oor* ~ **ol-* (Bürgisser's locutions). The five basic terms I was referring to were Dravidian **ŏ̄r* : **ol-*, Indo-European **oi-nos*, or **oi-no-*, Uralic **ikte* ~ **ükte*, Altaic **bir* (Greenberg **bi̯uri*), and in Afro-Asiatic such forms as Hebrew *eḥad*, Arabic *waḥid* (*pron. aḥad*), Akkadian *ēdu* which forms, as noted in place, Dolgopolsky (2008: 97-98, no. 13a) sees to be related to the Uralic forms cited. To these we can perhaps add Indo-European **sem-*, which by my interpretation, though, functions as a substitute form for 'one' in Indo-European, completely replacing **oi-nos*, or **oi-no-* forms in some geographically eastern Indo-European only, much as the Proto-Altaic word for 'one' is replaced by innovations in most Altaic languages according to Miller (1971: 230).

I add that I notice in Bürgisser's bibliography that he does not mention:

Tuttle, Edwin Hotchkiss. 1932. "Dravidian and Nubian." *Journal of the American Oriental Society* 52: 133-144.

He may find it interesting to follow through on this study.

Juha Janhunen's comments I find to be pregnant with suggestive data.

Janhunen does not seem to believe in super-families of languages, focusing instead on parallel developments such as, for instance, Indo-European forms for 'one' being based on a deictic pronoun in the standard interpretations of the Indo-European number 'one' to date, and deictic pronouns being common sources for Uralic ordinals meaning 'first' and 'second,' as in Finnish *ensi* (< **e-mti*, from **e* 'this') and *toinen* (= *to-i-nen*, from **too* 'that'). He notes further that all Uralic forms for 'one' begin with a vowel, suggesting that they, too, may be connected with deictic pronouns of the type *V(-).

Indeed, Janhunen argues that the Ural-Altaic complex, itself, ought not to be understood as a genetic entity in the sense of a language family, the six entities that comprise the complex – Uralic, Turkic, Mongolian, Tungusic, Korean, and Japanese, being a relevant object of study in the main in the areal and typological sense. Of these entities, he notes, Uralic stands apart because of its great linguistic and geographic diversification and, hence, age. The other entities he sees to have relatively shallow time depth.

Janhunen also refers to the Indo-European decimal system as being more advanced than that of Finno-Ugric and Samoyedic, which he sees to each have had systems with 'six' as the highest number. He sees this to have been replaced by the more advanced Indo-European system, all the Uralic languages borrowing from Indo-European the numeral for 'seven,' some Uralic languages (Ugric and Permic) borrowing the Indo-European term for 'ten,' and the Finno-Ugric languages borrowing the Indo-European term for 'hundred,' Samoyedic borrowing it from Turkic.

The Altaic languages, with their shallower time depth, all show fully developed decimal systems for their proto languages. Only for pre-Proto-Japanese does it seem possible to postulate an original non-decimal system.

So, also, Emeneau (1957) sees the Dravidian numerical system to be based on eight, which Levitt (1989: 140-41) refutes. Note that Dravidian contains not only independently derived words for 'nine' and 'ten,' as mentioned above in section **4** on metathetic *tik* forms, but also words for 'one hundred,' Tamil *nūṟu* (*DEDR* 3729); 'one thousand,' Ta. *āyiram* (*DEDR* App. 11); and perhaps 'a crore (= ten million),' Ta. *kōṭi*, for instance.

Burrow (1947: 133) would derive Ta. *āyiram*, etc. 'one thousand' from Sanskrit *sahasra* id. As explained by Zvelebil (1970: 114) in loanwords, Tamil drops an Indo-Aryan initial as well as medial *s* and *ś*. Thus, Indo-Aryan *sahasra* > **sāsira* > Ta. *āyiram*, Malayalam id., Koḍagu *āirë*, *āira* – but Kota *cāvrm*, Toda *sōfer*, Kannaḍa *sāvira*, *sāsira*, Tulu *sāvira*, *sāra*. He notes that such a borrowing would be very old in Tamil, as it appears already in the classical Tamil *Puṟanāṉūṟu* 391.21 and in the earliest Tamil grammar, *Tolkāppiyam*, *Eḻuttatikāram*, *sūtra* 391.

Devaneyan (1966: 96-97, 2004: 26^1-28^1), on the other hand, argues that Ta. *āyiram*, etc. is derived within Dravidian from the etyma in *DEDR* 341 Ta. *ācu* 'minuteness, fineness …,' *ayir* 'subtlety, fineness, fine sand …' and in *DEDR* 191 Ta. *ayirai*, *acarai* 'loach, sandy color …,' *ayilai* 'a kind of fish …, a fish, mackerel, scomber …' (Devaneyan, ' a species of river or freshwater fish that buries itself in sand on the bed'). The Kannaḍa form, he argues, is related to the Tamil form. And he provides evidence of the prothetic addition of initial *s*-, ignored by Burrow, and of medial -*y*- being represented by -*c*- / -*s*- in colloquial Tamil and Kannaḍa. Tulu, he notes, generally follows Kannaḍa.

Devaneyan's derivation of Ta. *āyiram* would have it be comparable to the generally accepted etymology of Skt. *lakṣa* 'ten thousand,' which relates this form to words for 'salmon' in Germanic (*EWA* 2: 472, Pokorny 1959-69/1: 653).

Skt. *sahasra* is given an Indo-European derivation by *KEWA* 3: 451-52 and *EWA* 2: 812, relating it not only to Persian *hazār* 'one thousand,' but also to Skt. *hasta* 'hand.' The initial *sa*- is seen to come from PIE **sm̥* < **sem*- indicating 'one' and unity (see also Pokorny 1959-69/1: 902).

Probably, the Dravidian and Sanskrit words for 'one thousand' are unrelated and independent of one another. An explanation of the Dravidian forms from the Sanskrit, or of the Sanskrit form from the Dravidian, both require a good deal of phonological finagling. (Devaneyan suggests the latter as a possibility, giving it along with an Indo-European derivation for Skt. *sahasra* comparable to that given here.)

Ta. *kōṭi* 'a crore; a large number; a multitude, as of living beings,' with reflexes in Malayalam, Kannaḍa, Tulu, Telugu, and Gondi, for instance, is normally derived from Skt. *koṭi* 'a crore' (see, for instance, Fabricius 1933: 313a). No doubt, for this reason, *DEDR* ignores Dravidian words for 'ten million' (so, also, the earlier *DED*). *TED* 2/3: 304b-305a, on the other hand, suggests it is a native Dravidian word, and lists it together with Ta. *kōṭi* 'a score, as in counting precious stones, silks, etc.' (Fabricius 1933: 312b, '[in counting gems] a collection of twenty, a score'). Fabricius lists this latter form separate from the former, and notes it to be a native Dravidian term.

The Sanskrit term occurs first in the *Mahābhārata* epic, which dates perhaps from the 2nd c. B.C.E. to the 2nd c. C.E., and in the earliest Sanskrit law book in verse form, the 'Laws of Manu,' which dates from the 2nd to 3rd c. C.E.

EWA 3: 116 views the Sanskrit word's derivation to be "not convincingly explained." *KEWA* 1: 270, however, following Przyluski (1929: 25-32), opined that its derivation was Austroasiatic. Words for 'point, highest point,' to which *EWA* sees the Sanskrit word for 'ten million' to be related are, however, following Burrow (1945: 93-94, no. 15.3), given a Dravidian etymology in *KEWA* 1: 270, 251 *s.v. kūṭam* (*DED* 1704; without Indo-Aryan cross-references, *DEDR* 2049).

See also Skt. *kūṭa* 'heap, multitude' in *KEWA* 1: 252, for which *KEWA*, following the Dravidian etymology offered by Burrow (1945: 94, no. 15.4), cites forms in Malaylam and Kannaḍa (*DED* 1562, *DEDR* 1882; without Indo-Aryan cross-references in both). *EWA* 3: 117 back steps here, too, and opines "not clear."

Przyluski had derived the Sanskrit form from Munda words for 'score' (or, 'twenty') that are found in Bengali, he claims. The non-South Asian Austroasiatic cognates mean 'ten.' Przyluski argues that as the practice of counting advances, the value of a number used originally to signify the highest number rises. Thus, it comes to mean 'ten million' in Indo-Aryan languages.

As already noted, the meaning 'score' for *kōṭi* appears in Tamil, as well, in a form the Dravidian integrity of which has never been questioned.[9]

Burrow (1971: 551) back steps from his earlier view regarding Skt. *koṭi* 'point, highest point,' separating it from Skt. *kūṭa* 'summit, top, summit or peak of a mountain,' with which he had previously lumped it together. He here compares it with Latin *cautes*, *cautis* 'sharp, jagged rock,' pointing to Skt. *śata-koṭi* 'having a hundred sharp points (of Indra's *vajra*, or bolt).'

This proposed derivation is a stretch.

No matter what the immediate source of Skt. *koṭi* is, whether Austroasiatic or Dravidian – and an Austroasiatic derivation as argued by Przyluski is also a stretch, the Dravidian term appears to have Dravidian integrity.

To return to Janhunan's comments, they constitute proof that a reconstruction is only as good as the information taken into account in its formation – which speaks against doing reconstructions based on reconstructions, as done by Illič-Svityč, Dolgopolsky, and Bomhard. By staying closer to the original data in making our observations, we might well see things that otherwise we would miss. I think Janhunen's comments indicate this.

I would like to thank Juha Janhunen for taking the time to pull together his comments.

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[9] Austroasiatic and Dravidian have many forms in common. For instance, words for 'plough' and 'fruit,' both of which also have reflexes in Afro-Asiatic ('plough' also with reflexes in Sumerian and Kanauri [Sino-Tibetan], 'fruit' also with a reflex in Sanskrit; see Levitt 2008b). And, for instance, one of the Dravidian words for 'mushroom' (also with a possible reflex in Uralic; see Levitt: 2011: 111-12, 1989b: 38-39). To this list we can add Munda words for 'score,' with the immediate source of the Bengali words being just as likely Dravidian as Munda.

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Association for the Study of Language in Prehistory (ASLIP) News and Notices

Anthropology / Linguistics News

Just out in *PNAS* (*Proceedings of the National Academy of Sciences* published online before print May 6, 2013):

"Ultraconserved words point to deep language ancestry across Eurasia" (vol. 110 no. 19)

Mark Pagel[a],[b],[1], Quentin D. Atkinson[c], Andreea S. Calude[d], and Andrew Meade[a]
Author Affiliations
[a]School of Biological Sciences, University of Reading, Reading, Berkshire RG6 6AS, United Kingdom
[b]Santa Fe Institute, Santa Fe, NM 87501
[c]School of Psychology, University of Auckland, Auckland 1142, New Zealand
[d]Linguistics Programme, University of Waikato, Hamilton 3240, New Zealand

Edited by Colin Renfrew, University of Cambridge, Cambridge, United Kingdom, and approved April 15, 2013 (received for review October 31, 2012).

Abstract

The search for ever deeper relationships among the World's languages is bedeviled by the fact that most words evolve too rapidly to preserve evidence of their ancestry beyond 5,000 to 9,000 y. On the other hand, quantitative modeling indicates that some "ultraconserved" words exist that might be used to find evidence for deep linguistic relationships beyond that time barrier. Here we use a statistical model, which takes into account the frequency with which words are used in common everyday speech, to predict the existence of a set of such highly conserved words among seven language families of Eurasia postulated to form a linguistic superfamily that evolved from a common ancestor around 15,000 y ago. We derive a dated phylogenetic tree of this proposed superfamily with a time-depth of ~14,450 y, implying that some frequently used words have been retained in related forms since the end of the last ice age. Words used more than once per 1,000 in everyday speech were 7- to 10-times more likely to show deep ancestry on this tree. Our results suggest a remarkable fidelity in the transmission of some words and give theoretical justification to the search for features of language that might be preserved across wide spans of time and geography.

See: http://www.pnas.org/content/early/2013/05/01/1218726110/suppl/DCSupplemental

It is clear that the authors are well aware of previous work on remote linguistic relationships in Eurasia, since they mention and cite articles and books by A.R. Bomhard, A. Dolgopolsky, J.H. Greenberg, M. Ruhlen, and the long-range databases initiated by S.A. Starostin (http://starling.rinet.ru/ and http://ehl.santafe.edu/main.html). The authors conclude:

> "Proposals that link large numbers of the world's languages into linguistic superfamilies are frequently criticized ..., but this view needs revising ... . Our statistical model overcomes objections to the identification and existence of deep cognate relationships by providing a quantitative framework for expecting such deep links in a subset of vocabulary items, and lends a theoretical plausibility to the search for further candidate words uniting other linguistic families."

The PNAS article was reported in a popularized form in the *Washington Post*: **Linguists identify 15,000-year-old 'ultraconserved words',** by David Brown, May 06, 2013 07:00 PM EDT.

* * *

ASLIP Annual Meeting

The ASLIP annual meeting was held the 10th of November, 2012, at the Harvard University Sanskrit Department, 1 Bow Street, Cambridge, Mass. Attending were Michael Witzel (President), John D. Bengtson (Vice-President), Michael T. Lewis (Secretary-Treasurer), Harold C. Fleming (Board of Directors), Sydney M. Lamb (Council of Fellows), Nicholas Davidson, and B.K. Rana.

Because of a change in IRS rules the non-profit status of ASLIP had been temporarily suspended. Since the officers became aware of this President Witzel has been working to restore non-profit status, and it will have to be renewed yearly.

The need to bring ASLIP into the twenty-first century – *i.e.*, its electronic presence – was discussed. Desiderata include updating and modernizing the ASLIP homepage (http://www.aslip.org) and electronic publication of *Mother Tongue*. The obstacles thus far have been lack of financial and personnel resources. Nick Davidson discussed the possibility of foundation support, and VP Bengtson expects to find more time to dedicate to ASLIP work after he retires from his longtime day job in Spring of 2013. Technical Advisor Brita Bengtson will continue to be involved in further electronic development of ASLIP.

Hal Fleming put forward a suggestion that ASLIP establish a publishing branch – "MT Press." This would allow writers to bypass conventional publication and offer their work at a low cost – in tens of dollars rather than hundreds. Syd Lamb pointed out that books can now be printed "on demand," rather than printing a large quantity of books and hoping someone buys them.

It was noted by VP Bengtson that there are some rather large quantities of *Mother Tongue* back issues, *e.g.* about 35 of MT V and 21 of MT VII, which can be made available to MT readers who lack earlier issues (see below).

B.K. Rana from Nepal, who now lives in the Boston area, has been working with the last remaining speakers of the dying Kusunda language (see MTs II, III, X, XI). Mr. Rana reports that the Nepal census counts 164 Kusunda people, but he knows of only two fluent speakers. The AEQUA Foundation, with help from Nick Davidson, is supporting field work on Kusunda in Nepal.

President Witzel called attention to a new website, "newguineaworld," authored by researcher Timothy Usher (see MTs VII and XI). The site's purpose "is to present a full-spectrum online dataset describing the world's languages, with an emphasis on data types most likely to be of use to comparativists. While all natural languages are of interest, priority is given to lesser-known regions for which documentation is harder to come by." The site is still under construction and not yet available to the public – but "stay tuned!".

Finally, the yearly election of ASLIP officers and Board members was conducted. (See inside front cover of this issue for the list.) The meeting was adjourned and most of the attendees reconvened at the nearby Hong Kong Restaurant for lunch.

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Back Issues of MOTHER TONGUE

Back Issues of *Mother Tongue* are available for sale. The following table summarizes some of the topics covered in issues I – XVI:

I (1995) **Inaugural Issue:** Canaanite & Bengali, Austric; Basque & Dene-Caucasian (R.L. Trask & 12 discussants); Proof in Genetic Linguistics (Greenberg)
II (1996): Kusunda, Ainu, Basque, Nihali (Mundlay & 8 discussants); Basque & Dene-Caucasian (S. Starostin, Trask, Ruhlen); Multilateral comparison (Greenberg)
III (1997): Kusunda, Nihali, Sumerian; "Hardware" / Origin of Language Symposium (Zegura, Lieberman, Donald, Fitch, Deacon); Recommendations for Long Rangers (Benedict); S.A. Starostin
IV (1998): Yeniseian; Ainu (Sidwell, Itabashi, Norquest, Bengtson); Deep classifications; Apophony (ablaut)
V (1999): Austric (Hayes, Blažek, Blust, van Driem, Fleming); Basque & Caucasian (Bengtson & 6 discussants); Sumerian (Srinivasan, Witzel, Diakonoff, Bengtson); Climatic influences on language; Bipeds, tools & speech; American prehistory
SPECIAL ISSUE (1999): **South Asian substrate languages** (Witzel, Whitehouse, van Driem, G.D.S. Anderson, Kuiper, Masica, Mundlay); Austronesian taxonomy
VI (2000/2001) **Festschrift for Roger W. Wescott**: Austric; Paleolinguistics: The State of the Art and Science (10 discussants); Obituaries: Wescott, Gordon, Greenberg
VII (2002) **In Honor of Joseph H. Greenberg**: Elamite, Dravidian, Ongota, Shabo, Tasmanian, Andamanese, Eurasiatic; Greenberg's taxonomic proposals; Proto-Human or Proto-Sapiens
VIII (2003) Linguistic Databases & Taxonomy Workshop (SFI): Nostratic, Salishan & Caucasian, Basque, Khoisan, Negative Evidence (Whitehouse); EHL Project
IX (2004): Australian languages, Kadu, Ongota, Shabo; Australian languages (O'Grady & Whitehouse); Proto-Sapiens kinship words: (P)APA, (T)ATA; Mario Alinei
X (2005): Kusunda, Basque, Eurasiatic; Obituaries: Livingstone, S. Starostin, Greenberg; Flores "hobbits"; Great Archeological Debate; Pre-Clovis site; Chinese genome; Trombetti
XI (2006) **Asian Remnant Languages & Year of the Australoid** (Harvard / ASLIP Conference, 2006): Indo-Pacific, South Asian languages, Tibeto-Burman,

Austroasiatic, Kusunda, Austric, Australian, Dravidian, Andamanese; Archeology of Southern Route (Harrod); Out of East Africa by 77K BP (Brooks); Population genetics

XII (2007) **In Honor of Harold C. Fleming's 80th Birthday**: Indo-European, Nostratic, Kartvelian, Bangi Me, Shompen, Dravidian; Nostratic Phonology (Bomhard, Sidwell, G. Starostin); Obituaries (Orel, Helimski, Bender); Glottochronology, Genetics

XIII (2008) **Commemoration of Ann Arbor Language & Prehistory Symposium (1988):** Milyan, Nostratic, Uralic, Chukcho-Kamchatkan, Shompen, Andamanese; Obituaries: Zvelebil, O'Grady; Bio-genetics; Fallacy of time limit; Myth of rapid linguistic change; Linguistic chronology

XIV (2009) **Commemoration of Daniel F. McCall**: Indo-European, Caucasian, Basque, El Molo, Mesmes, mystery languages of East Africa; Berber *H (Fournet, Blažek, Kossmann, Prasse); Paleoanthropology; Myth of rapid linguistic change II; Numerals (Hurrian, Nilotic); Profiles (Dolgopolsky, Mallory)

XV (2010) **Fifteenth Anniversary Issue 1995-2010:** Areal patterns of myth motifs (Berezkin); Holocene etymology of 'pitch'; Myth of rapid linguistic change III; Yeniseian numerals; Afrasian etymologies; Review of Campbell & Poser *Language Classification*

XVI (2011): Archeology & Genetics; Indo-European & Fenno-Ugric (Pedersen); Chinese giant Pangu; Minoan; Milyan; Surmic numerals; Dene-Caucasian; Myth of rapid linguistic change IV; Review of Jones & Milicic *Kinship, Language & Prehistory*

Back issues can be had for $10 (domestic U.S.) or $20 (foreign). Please contact ASLIP Secretary-Treasurer **Michael T. Lewis**, 20 Duane Avenue, West Newton, MA 02465, U.S.A. | Tel. 617-964-0978 | lewismtc@rcn.com

Book Notice

E.J. Michael Witzel: *The Origins of the World's Mythologies.* Oxford University Press (New York) | Dec. 2012.

This remarkable book is the most ambitious work on mythology since that of the renowned Mircea Eliade, who all but single-handedly invented the modern study of myth and religion. Focusing on the oldest available texts, buttressed by data from archeology, comparative linguistics and human population genetics, Michael Witzel reconstructs a single original African source for our collective myths, dating back some 100,000 years. Identifying features shared by this "Out of Africa" mythology and its northern Eurasian offshoots, Witzel suggests that these common myths — recounted by the communities of the "African Eve" — are the earliest evidence of ancient spirituality. Moreover these common features, Witzel shows, survive today in all major religions. Witzel's book is an intellectual hand grenade that will doubtless generate considerable excitement — and consternation — in the scholarly community. Indeed, everyone interested in mythology will want to grapple with Witzel's extraordinary hypothesis about the spirituality of our common ancestors, and to understand what it tells us about our modern cultures and the way they are linked at the deepest level.

Features

- Demonstrates the prehistoric origins of most of the Eurasian and Laurasian mythologies.
- Establishes a basis for much of our ancestral spirituality.

688 pages | 15 maps | 11 b&w halftones | 6-1/8" x 9-1/4" | hardback & paperback

Review

> "Not since Frazer's *Golden Bough,* not since Casaubon's *Key to All Mythologies,* has anyone achieved such a grand synthesis of world mythology. Boldly swimming upstream against the present scholarly emphasis on difference and context, Witzel assembles massive evidence for a single, prehistoric, Ur-mythology. An astonishing book."
>
> Wendy Doniger, Mircea Eliade Distinguished
> Service Professor of the History of Religions
> at the University of Chicago and author of
> *The Woman Who Pretended to Be Who She Was*

http://www.oup.com/us/catalog/general/subject/ReligionTheology/MythologyFolklore/?view=usa&ci=9780199812851